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Cooperative Research Report
to the Bureau of Land Management

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June 1971

GRAZING SYSTEMS RESEARCH

Submitted by Wyoming Agricultural Experiment Station

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Influence of Grazing Management Systems
on Vegetation and Wildlife Habitat

by

H. G. Fisser and R. P. Gibbens¹

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¹Professor of Range Management and Specialist, Range Management Section, University of Wyoming, Laramie, Wyoming, respectively.

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Introduction

In 1967 the Wyoming Agricultural Experiment Station and the Bureau of Land Management initiated a cooperative program to study the influence of grazing systems upon vegetation and wildlife habitat. A 68,000 acre study site was selected west of Baggs, Wyoming. This site is divided into a four-pasture rest-rotation unit and a one-pasture unit with season long grazing. Acreages and grazing schedules for the various units are shown in Figure 1. A general description of the study site has been presented previously 1/ as well as the locations of all study plots and exclosures 2/.

Methods and Procedures

During the summer of 1970 vegetative cover and composition determinations were made on the 95 permanent trend transects which had been established in 1967 and 1968. Estimation and photographic procedures were the same as used in previous years and these have been described elsewhere 3/. Utilization of forage by sheep and cattle was determined at the end of the various use periods. Procedural details have been reported previously 2/.

- 1/ Gibbens, R. P., H. G. Fisser, and M. May. 1968. Grazing Systems Research - Annual Progress Report, 1967. Wyo. Agr. Exp. Sta. Sci. Report No. 102. 8 p.
- 2/ Gibbens, R. P., H. G. Fisser, and M. May. 1969. Grazing Systems Research - Annual Progress Report, 1968. Wyo. Agr. Exp. Sta. Sci. Report No. 179. 132 pp.
- 3/ Fisser, Herbert G. 1967. Exclosure study with transects of permanent plots - 1967 data. Wyo. Agr. Exp. Sta. Sci. Report No. 118. 52 pp.

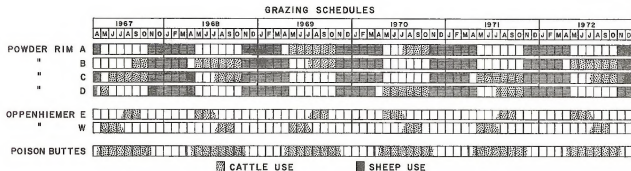
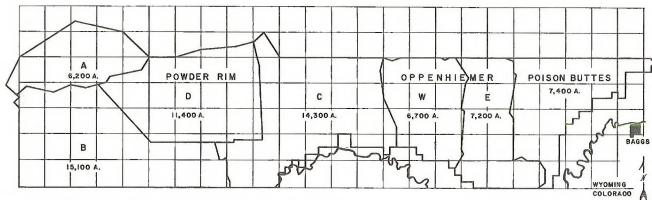
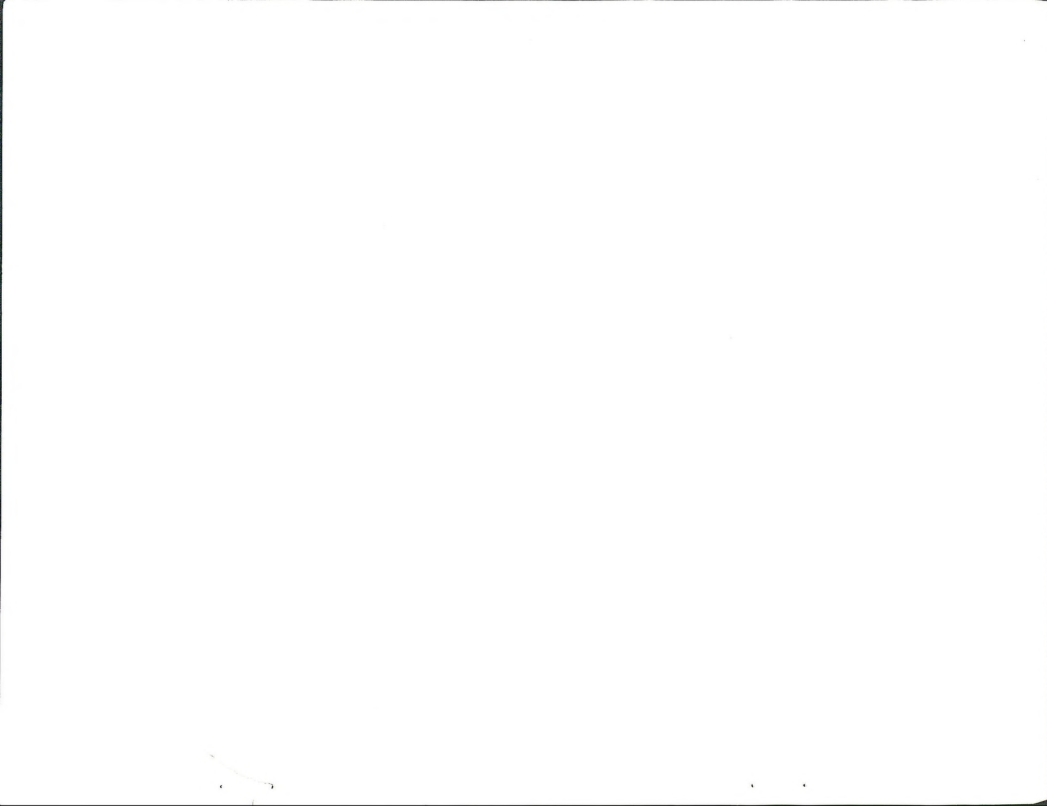


Figure 1. Map of the Baggs study area showing grazing units and approximate acreages. Grazing schedules for each unit are shown in the diagram below. The grazing schedule for the rest-rotation system in the Powder Rim allotment was adjusted to permit a more equitable distribution of forage among the operators. This change became effective on May 1, 1968 and a cycle of the grazing system will be completed at the end of the 1971 season.



Trends in Vegetative Cover

Summaries of the vegetative cover and composition for each trend transect sampled in 1970 are included in Appendix A. Codes used for plant species in the summaries are given in Appendix D.

One cycle of the rest-rotation grazing system will not be completed until the close of the summer, 1971 grazing season. However, it was felt that a preliminary assessment of trend would be appropriate at this time. Four grasses considered to be the most important in terms of forage production, abundance, preference and uniformity of distribution were selected for examination. These were western wheatgrass, Indian ricegrass, needleandthread and bluebunch wheatgrass.

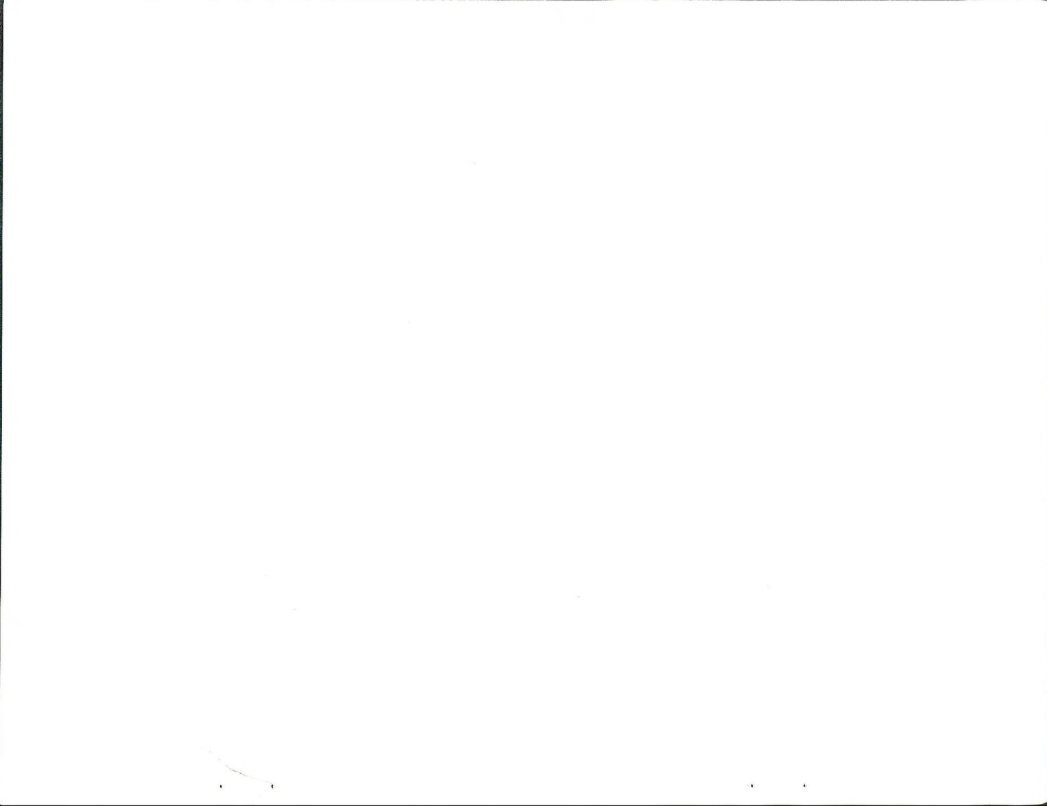
The 1967 and 1970 mean percentage cover values (averages of 20 1 ft X 1 ft plots at each site) for the above species and for total grass cover were compared on 73 grazed sampling sites. Not included were the trend transects associated with the two game and livestock exclosures as these were not established until 1968.

Total grass cover increased on 58, or 79 percent of the sites, and decreased on the remainder (Table 1). Western wheatgrass, best represented of the individual species, occurred at 66 sites and cover increased on 57 sites (86%), declined on 8 sites (12%), and remained unchanged at 1 site (2%). Indian ricegrass, present in one or both years at 50 sites, increased on 26 sites (54%), decreased on 17 sites (33%) and remained the same on 7 sites (13%). Needleandthread was represented at 40 sites in one or both years and increased on 23 sites (58%), declined on 8 sites (20%), and remained unchanged at 9 sites (22%). Bluebunch wheatgrass was present on

The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation $f(x) = \int_0^x f(t) dt$. It is shown that $f(x)$ is a constant function, and its value is determined by the initial condition $f(0) = 1$. The second part of the paper is devoted to the study of the properties of the function $g(x)$ defined by the equation $g(x) = \int_0^x g(t) dt$. It is shown that $g(x)$ is a constant function, and its value is determined by the initial condition $g(0) = 1$. The third part of the paper is devoted to the study of the properties of the function $h(x)$ defined by the equation $h(x) = \int_0^x h(t) dt$. It is shown that $h(x)$ is a constant function, and its value is determined by the initial condition $h(0) = 1$. The fourth part of the paper is devoted to the study of the properties of the function $k(x)$ defined by the equation $k(x) = \int_0^x k(t) dt$. It is shown that $k(x)$ is a constant function, and its value is determined by the initial condition $k(0) = 1$. The fifth part of the paper is devoted to the study of the properties of the function $l(x)$ defined by the equation $l(x) = \int_0^x l(t) dt$. It is shown that $l(x)$ is a constant function, and its value is determined by the initial condition $l(0) = 1$. The sixth part of the paper is devoted to the study of the properties of the function $m(x)$ defined by the equation $m(x) = \int_0^x m(t) dt$. It is shown that $m(x)$ is a constant function, and its value is determined by the initial condition $m(0) = 1$. The seventh part of the paper is devoted to the study of the properties of the function $n(x)$ defined by the equation $n(x) = \int_0^x n(t) dt$. It is shown that $n(x)$ is a constant function, and its value is determined by the initial condition $n(0) = 1$. The eighth part of the paper is devoted to the study of the properties of the function $o(x)$ defined by the equation $o(x) = \int_0^x o(t) dt$. It is shown that $o(x)$ is a constant function, and its value is determined by the initial condition $o(0) = 1$. The ninth part of the paper is devoted to the study of the properties of the function $p(x)$ defined by the equation $p(x) = \int_0^x p(t) dt$. It is shown that $p(x)$ is a constant function, and its value is determined by the initial condition $p(0) = 1$. The tenth part of the paper is devoted to the study of the properties of the function $q(x)$ defined by the equation $q(x) = \int_0^x q(t) dt$. It is shown that $q(x)$ is a constant function, and its value is determined by the initial condition $q(0) = 1$.

Table 1. Number of grazed trend transect sites showing an increase or decrease in cover of grasses on the various pastures from 1967 to 1970.

Pasture	Total grass cover			Western wheatgrass			Indian ricegrass			Needleandthread			Bluebunch wheatgrass			
	Number of sites with			Number of sites with			Number of sites with			Number of sites with			Number of sites with			
	Increase	Loss	No change	Increase	Loss	No change	Increase	Loss	No change	Increase	Loss	No change	Increase	Loss	No change	
Poison Buttes	9	2		10	1		2	2		2	4	1				
Oppenhiemer E	9			8					1	2	1	2		1		
Oppenhiemer W	6	3		7	2		4	2		3		2			1	
Powder Rim A	9	3		9			9	2	1	5	1	2		4	2	
Powder Rim B	8	4		7	3		6	4	2	1	2	1			1	
Powder Rim C	7	2		6	1	1	1	5	1	6						
Powder Rim D	10	1		10	1		4	2	2	4		1			1	
Total	58	15	0	57	8	1	26	17	7	23	8	9		5	5	0

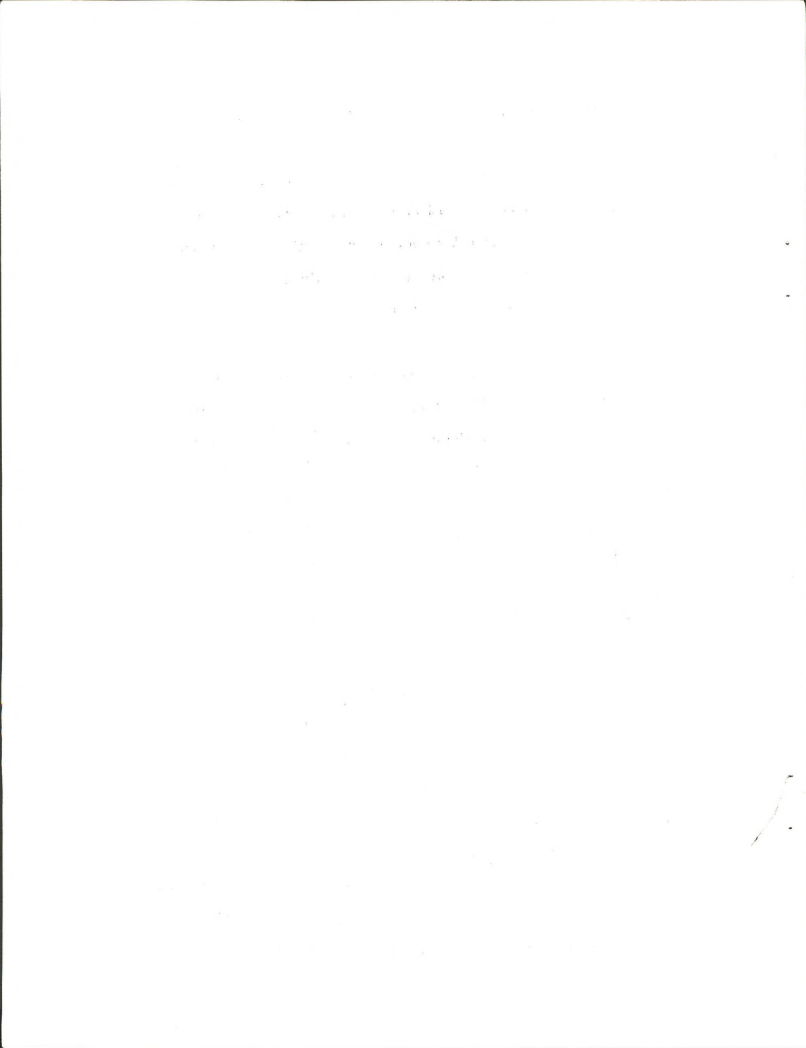


only 10 sites and increased on half of these and decreased on the other half.

From the preponderance of increases it seems that the trend in grass cover has been upward on all grazing units since 1967. It is felt that the general reduction in stocking rates which occurred just prior to 1967 and the relatively good moisture conditions which have prevailed for the past few years have both contributed to the upward trend.

There are, of course, differences between pastures in the number of sites losing or gaining cover (Table 1). Using the arcsin transformation of the actual amount of change in percent total grass cover from 1967 to 1970 an analysis of variance was performed to see if differences between pastures could be detected. Transects within exclosures were included as a no-grazing treatment. The calculated F value did not approach significance, even at the 10 percent level. This indicates that variation within the population of grass cover values circumscribed by the permanent plots is such that changes, if any, due to the different grazing treatments cannot be detected. This is not surprising when one considers the fact that the overall range in total grass cover is only 0.08 to 6.39 percent. With such a narrow range, overlap between treatments is large and there would have to be a consistent decline or increase within treatments to create a detectable difference. Such is not the case as practically all grazing treatments show both increases and decreases in grass cover.

Shrub and forb cover was not examined in detail but inspection of the data did not reveal any major changes nor any marked differences between treatments. One change which is quite noticeable in the field



is the increase in big sagebrush seedlings on sprayed sites. Recovery of the big sagebrush appears to be inevitable although the process will probably take many years.

The permanent belt transects in the Utah juniper type were examined in the field but were not sampled. As has been the case for the past two years, there was no evidence of new brush seedlings. Remnants of the 1967 crop of brush seedlings are still in evidence but any new seedlings which do appear will be readily distinguishable from the older ones. For the first time during the period of study an abundant crop of mountain mahogany seed was produced. Thus, if suitable moisture and temperature conditions prevail in spring, 1971 there is a good chance for the establishment of mountain mahogany seedlings.

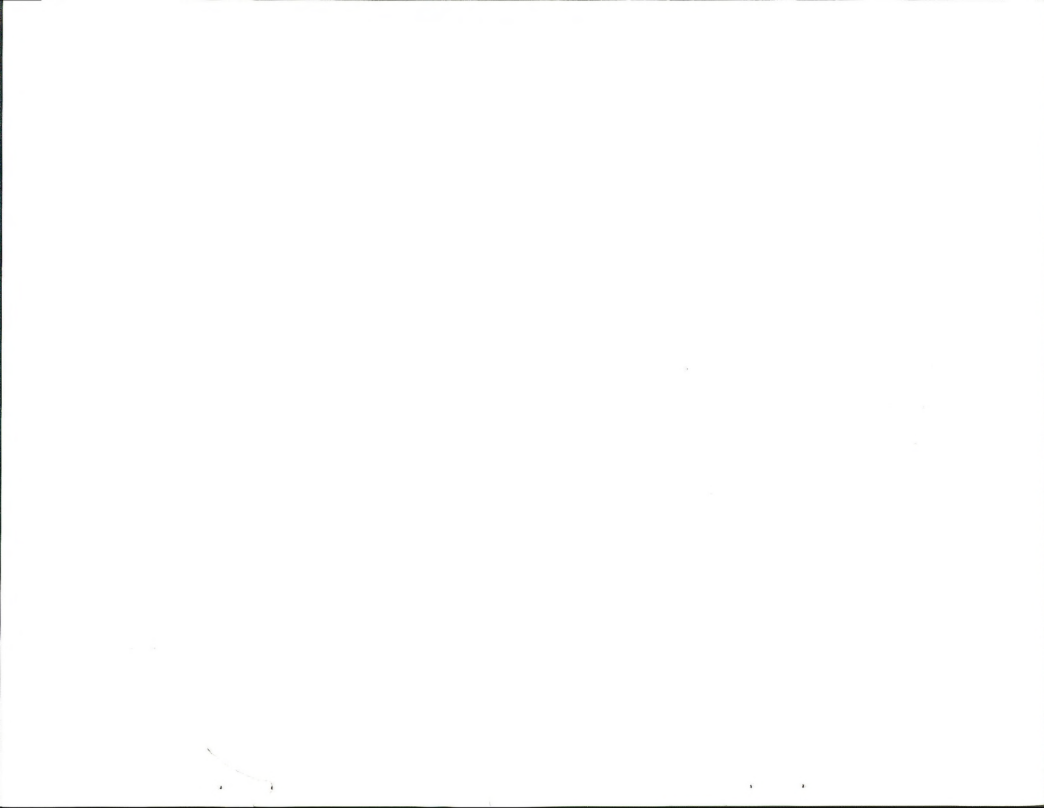
Precipitation and Vegetation Response

Precipitation for the period beginning in October, 1969 and ending in October, 1970 averaged 9.49 inches, slightly less than for the previous period of like duration (Table 2). Forage growth was slow until after a late spring storm. July and August had very little effective precipitation and grasses dried early. A heavy rain in early September did cause perennials to green up somewhat. Annuals, and particularly annual grasses, were not abundant. Although many forbs bloomed profusely it was not a good year for grass seed production, particularly western wheatgrass.

The winter and spring storms were of relatively low intensity and runoff was very light. This was reflected in the low level of water in surface reservoirs at the beginning of the summer grazing season. Some reservoirs dried up during the summer for the first time

Table 2. Precipitation Records

Rain Gauge Number	Location: Pasture or Pasture Junc.	Total Oct. 1967 Oct. 1968	Total Oct. 1968 Oct. 1969	25 Apr. 1970	27 June 1970	31 Aug. 1970	16 Oct. 1970	Total Oct. 1969 Oct. 1970
124	Poison Buttes Exc. I	10.69	11.99	4.37	2.61	1.00	2.85	10.83
125	Poison Buttes Exc. II	11.06	12.82	5.16	2.98	1.05	2.90	12.09
126	Poison Buttes - Opp.E.	8.50	10.97	3.41	2.56	0.68	2.55	9.20
127	Oppenhiemer E-W	8.29	9.39	3.58	2.60	0.97	2.66	9.81
128	Oppenhiemer Exc.	9.17	10.86	4.10	2.77	1.12	2.70	10.69
129	Oppenhiemer W-C	7.43	9.08	3.06	2.55	0.92	2.47	9.00
130	Powder Rim C Exc.	7.04	8.97	3.26	2.70	1.33	2.06	9.35
131	Powder Rim D Exc.	6.90	8.75	2.97	2.64	0.66	2.15	8.42
132	Powder Rim D-C	7.11	9.96	3.13	2.41	1.90	2.38	9.82
133	Powder Rim D-C-B	6.29	8.73	2.86	2.28	1.76	2.07	8.97
134	Powder Rim B-D	6.87	8.85	2.64	2.19	0.47	2.02	7.32
135	Powder Rim B	8.91	11.23	3.73	2.36	0.77	2.54	9.40
136	Powder Rim B Exc.I	8.19	9.17	3.16	3.32	0.82	2.16	9.46
137	Powder Rim B Exc.II	10.75	12.94	5.13	3.37	0.48	2.49	11.47
138	Powder Rim A-B	9.05	12.12	3.30	2.98	0.49	2.31	9.08
139	Powder Rim A Exc.I	8.94	10.87	3.13	3.34	0.58	2.36	9.41
140	Powder Rim A	7.29	9.39	1.84	2.94	0.43	1.84	7.05
Average		8.38	10.36	3.46	2.74	0.91	2.38	9.49



since the study was started. This affected use patterns to a considerable degree. In the case of the Oppenhiemer pastures the shortage of water in the West pasture necessitated the use of the East pasture as a water source. Hence the East pasture was grazed to some degree throughout the season and not rested in the last half of the season as scheduled.

It is apparent in Table 2 that two rain gauges, numbers 125 and 137, have consistently higher averages than the others. Since all gauges are mounted at the same height above the ground the only difference lies in the fact that these two gauges are located in the Utah juniper type while all others are in exposed positions. Evidently the sheltering effect of the trees has a marked effect on the amount of precipitation trapped by the small diameter gauges. The indication is that air turbulence over the small orifices of exposed gauges is resulting in a significant underestimation of precipitation.

Forage Utilization

Estimates of shrub utilization and utilization of new growth of grasses were made following winter and early spring grazing by sheep. Estimates made at each sampling site are presented in Table 1 of Appendix B. Sheep use of big sagebrush ranged from 10 to 17 percent within the four pastures of the rest-rotation unit. Utilization of Nuttall saltbush ranged from 38 to 62 percent. Sheep utilization of dry grass forage was spotty but was rated as heavy in some areas. Use of new spring growth of grasses was below 10 percent on most areas although a maximum of 25 percent use was found on needleand-thread in Pasture C.

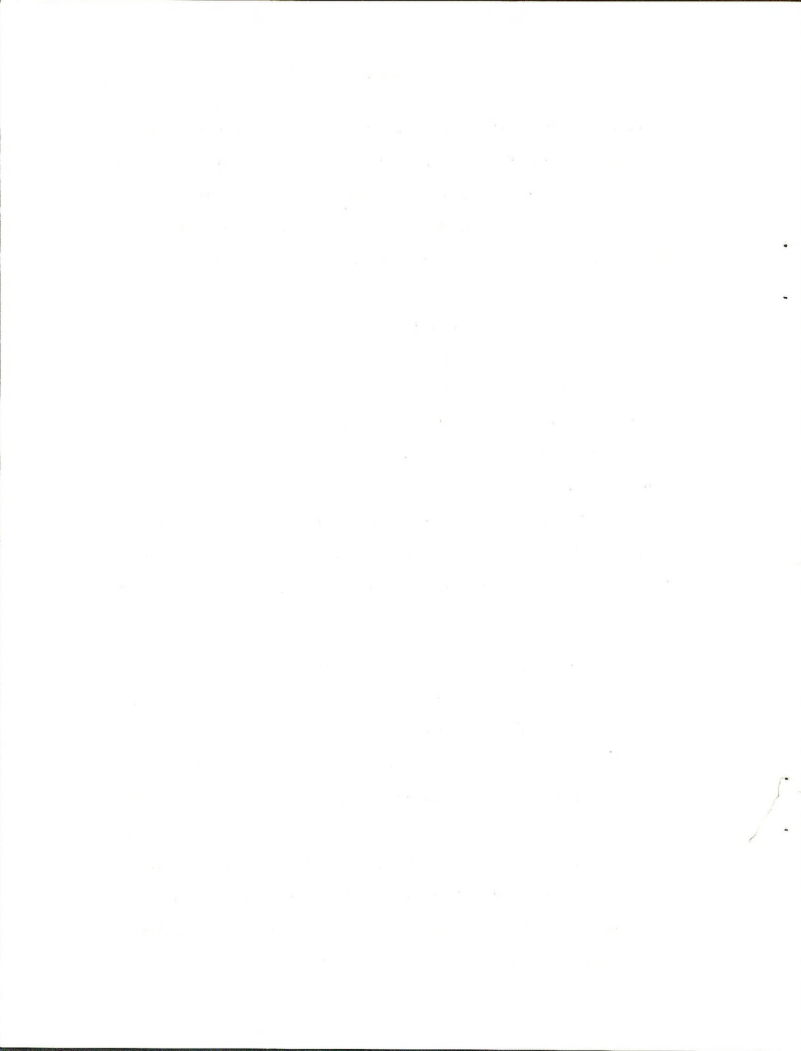


Table 3. Utilization of the key forage species (western wheatgrass) following grazing by cattle in summer, 1970. Based on stem count method with counts made on 1' x 1' plots positioned along a permanent paced transect at each sampling site.

Pasture	Grazing Period	Date of Sampling	Sampling Sites												Exc. I	Avg. ^{1/}
			C1-1	C2-1	C3-1	C4-1	C5-1	C6-1	C7-1	C8-1	C9-1	C10-1				
Poison Buttes	15 Apr.- 15 Nov.	31 Oct. & 5 Nov.	30	35	53	Percent of Stems Grazed						79	44	77	61	
Oppenhiemer East	1 May - 31 Sep. ^{2/}	28 & 29 Sep.	81	30	77	74	43	42	43	X	X	X	37	54		
Oppenhiemer West	15 Jul.- 31 Sep.	28 & 29 Sep.	63	55	68	30	37	12	20	X	X	X	24	43		
Pasture A	15 Jul.- 15 Oct.	17 Oct.	67	66	28	20	15	19	0	X	X	X	69	41		
Pasture B	^{3/}	17 Oct.	--	0	3	31	0	2	21	25	48	3	86	17		
Pasture C	^{3/}	31 Oct.	42	16	19	NS	NS	20				40 ^{4/}	17	29		
Pasture D	1 May- 31 Oct.	17 & 31 Oct.	60	68	79	--	83	25	NS	NS	X	48	X	63		

^{1/} Averages were calculated from total stems counted in each pasture and are not averages of the sampling site percent utilization figures.

^{2/} Due to water shortage in Oppenhiemer West grazing continued in Opp. East after normal July 30 cutoff date.

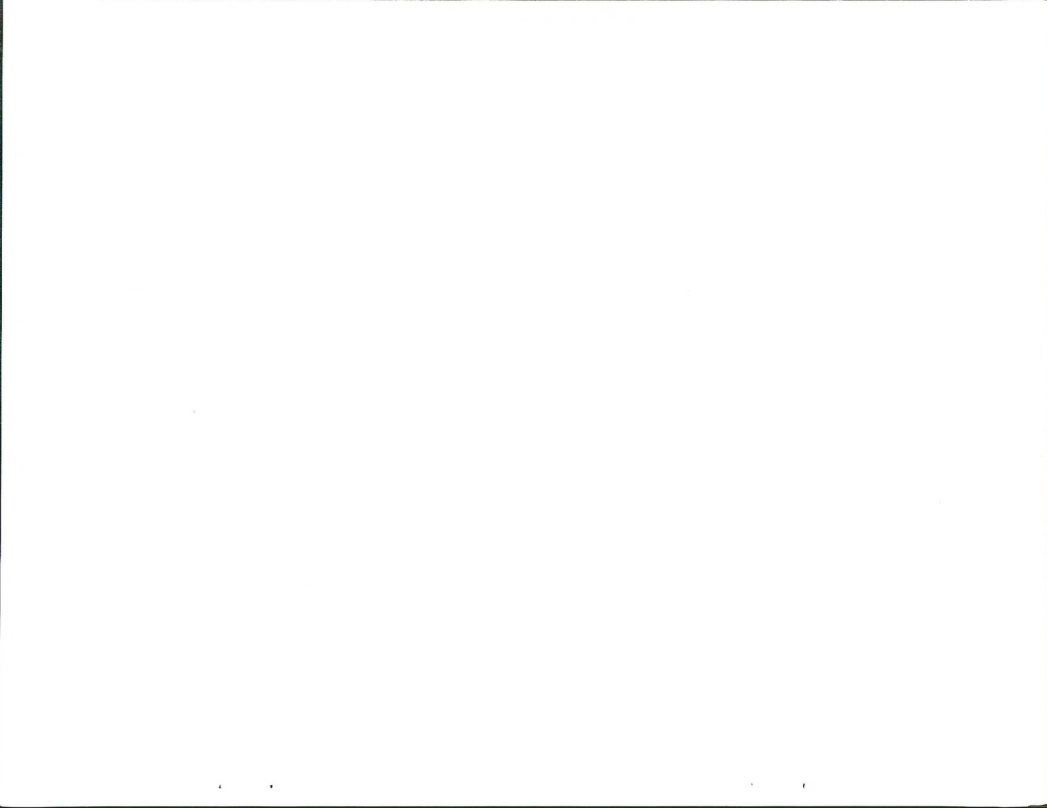
^{3/} Pastures B & C were not on grazing schedule but were grazed by drifting cattle during much of season.

^{4/} Sample taken in Stco type at site not previously used.

X- Site numbers not use.

-- No Agsm in sample.

NS-Site not sampled.



Cattle utilization of western wheatgrass on the various pastures during summer, 1970 is presented in Table 3. The degree of use in Poison Buttes was nearly the same as in 1969. Average use in Oppenhiemer East was somewhat higher in 1970 than in 1969, 54 and 47 percent, respectively. This is attributable to the longer than normal period of use resulting from the lack of water in Oppenhiemer West. In spite of the water shortage, utilization of western wheatgrass was the same (43 percent) in the West pasture in 1969 and 1970.

In the rest-rotation units pasture D was grazed season long and utilization of western wheatgrass was 63 percent. In pasture A, grazed only during the last half of the season, utilization of western wheatgrass was 41 percent. Pastures B and C were not scheduled to be grazed but uncorrected cattle drift into these pastures was of such magnitude that utilization checks were made. Average utilization of western wheatgrass was 17 and 29 percent in pasture B and C, respectively.

Utilization estimates of species other than western wheatgrass are presented in Table 2 of Appendix B. As in previous years Indian ricegrass and needleandthread received moderate to heavy use with up to 80 percent of current growth being taken. There was some use of Nuttall saltbush in pasture D.

Age of Utah Juniper Trees

Utah juniper is found in sparse to dense stands on about one-third of the study area. The trees are seldom more than 15 to 20 feet in height but appear to be very old. Cores were taken with an increment borer from a number of trees at sites scattered throughout the study area. Good cores were difficult to obtain from the gnarled,

twisted trunks which, more often than not, were rotted in the center. After over twice as many attempts, some 30-odd cores were obtained on which the growth rings could be counted with reasonable accuracy.

Trunk diameters were measured at the height of coring which was usually between 1 and 2 feet above the ground. No attempt was made to estimate the number of years necessary for the tree to grow to the height from which the core was extracted. Thus, the number of growth rings recorded is an underestimate of the actual age of the tree.

For eight trees with a diameter of 8 inches or less the average number of growth rings was 132. For 15 trees with diameters ranging from over 8 inches to 12 inches the average number of growth rings was 243. Eight trees with diameters ranging from over 12 to 19 inches had an average of 270 growth rings. Four of the trees sampled had over 300 growth rings and one had over 400 growth rings. The largest tree found on the study area had a dbh of 35 inches and was about 30 feet in height. A core from this tree, which did not extend to the center, contained 328 growth rings. If a uniform growth rate is assumed and extrapolated to the center of the tree the total age would be in excess of 650 years.

Considering the long period of time indicated by the number of growth rings, it seems logical to assume that most of the sites occupied by Utah juniper are now stocked at maximum density. Few replacements are needed for the long-lived individuals and in all of the stands a few seedlings and young trees can be found. Thus, the Utah juniper stands, which at first appear decadent, are probably relatively stable populations with normal rates of death and replacement.

Throughout the study area there are sites where a few Utah juniper trees have become established within the big sagebrush-western

wheatgrass type. Six of these small trees were cut off and growth rings counted at ground level. Heights ranged from 19 to 36 inches and age from 22 to 47 years. Trees smaller than these are very rare in the big sagebrush type. Thus, one can conclude that while Utah juniper does have the ability to invade contiguous vegetation types the process is very slow in this area. It is unlikely that any significant invasion will occur as long as grazing continues at present levels. One can theorize that much of the invasion which has occurred took place at a time when the competitive ability of brush and grass was lessened by heavy grazing.

Wildlife Observations

A maximum count of 115 antelope was made on the study area during the summer. This indicates that the small but consistent increase in antelope numbers continues. Through the cooperation of the Wyoming Game and Fish Dept. an aerial flight of the study area was made to count antelope. The prevalence of bluffs and rims greatly hampered execution of an effective flight pattern and made counting very difficult. The number of antelope observed was considerably below that obtained from ground counts. While aerial counts are of questionable value for this particular area the flight did show that there were no areas of antelope concentration not already determined by ground counts.

Examination of the areas of winter deer concentration revealed that, as in past seasons, utilization of current twig growth of mountain mahogany ranged up to 90 percent. Resident deer and several fawns were observed in Utah juniper stands during the summer. Tracks, the most observable indication of resident deer, did not appear more numerous than in preceeding years.

Sagegrouse were observed in pastures A and C and occasionally in D in both sprayed and non-sprayed areas. Broods were noticeably smaller than in 1969, seldom having more than 3 or 4 chicks.

Plant Collections

During the four field seasons that the study has been in progress every effort has been made to collect and identify all plants occurring on the study area. Duplicate mounts of all specimens have been prepared and one set has been given to the BLM district office at Rawlins. The other set is retained at the Range Dept., Univ. of Wyo. at Laramie. Also, specimens not previously reported for Wyoming or of rare occurrence have been given to the Rocky Mountain Herbarium, Univ. of Wyo., Laramie.

A checklist of plants was incorporated in the 1968 report. However, subsequent collections, nomenclatural revisions, and a few corrections of tentative identifications have made a revision of the first list desirable. This revised checklist is included as Appendix C. There are 33 species not previously included, bringing the total number of taxonomic entities up to 261. This relatively large number reflects the diversity of habitats encountered on the study area. In Appendix D the plants are grouped by life-form categories and the code designations used on field sheets and data summaries are given.

Soil Descriptions

Through the cooperation of Soil Conservation Service personnel, descriptions of 11 soils at eight exclosures and two other locations were obtained. On five sites dominated by big sagebrush three soil families were represented: Borollic Camborthids, ~~Borollic~~ Haplargids,

and Borollic Natrargids. Two soil families, Borollic Calciorthids and Ustic Torriorthents, were represented on the two sites dominated by Utah juniper. Other soil families represented included a Typic Torrifluvent on a site dominated by Nuttall saltbush, a Typic Torriorthent on a site dominated by alkali aster, and a Borollic Natrargid on a site dominated by birds-foot sagewort.

Details of the soil profile descriptions are given in Appendix D. Also included are range site classifications as estimated using the SCS system.

Appendix A

POISON BUTTES ALLOTMENT

C1-1
Artr-Agsm Type
NE exp., 2^o slope
7 July 1970

C2-1
Artr-Agsm Type
W exp., 3^o slope
9 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	12.29				Artr	13.01			90
Shrub Total	12.29				Shrub Total	13.01			
Agsm	0.45	20.18	25.86	75	Agsm	1.01	40.40	52.06	90
Cael	0.77	34.50	44.27	75	Kocr	0.08	3.20	4.12	5
Orhy	0.01	0.45	0.57	5	Orhy	0.01	0.40	0.52	5
Pose	0.24	10.76	13.79	85	Pose	0.23	9.20	11.86	50
Sihy	0.05	2.24	2.87	25	Sihy	0.10	4.00	5.15	15
Stco	0.22	9.87	12.64	45	Stco	0.50	20.00	25.77	80
					Feoc	0.01	0.40	0.52	5
Grass Total	1.74	78.00	100.00		Grass Total	1.94	77.60	100.00	
Alac	0.01	0.45	2.04	5	Alac	0.01	0.40	1.77	10
Andi	0.02	0.90	4.08	15	Andi	0.03	1.20	5.36	10
Arabis spp.	0.02	0.90	4.08	15	Crepis spp.	0.02	0.80	3.57	15
Aspu	0.01	0.45	2.04	10	Eren	0.02	0.80	3.57	15
Eren	0.05	2.24	10.20	45	Oppo	0.25	10.00	44.63	10
Lofo	0.02	0.90	4.08	20	Phho	0.05	2.00	8.93	50
Oppo	0.19	8.52	38.79	25	Phlo	0.03	1.20	5.36	25
Phho	0.07	3.14	14.29	50	Spco	0.01	0.40	1.79	10
Phlo	0.03	1.35	6.12	30	Trgy	0.02	0.80	3.57	15
Spco	0.01	0.45	2.04	5	Alde	0.10	4.00	17.86	95
Trgy	0.03	1.35	6.12	25	Unid.	0.02	0.80	3.57	15
Alde	0.03	1.35	6.12	25					
Forb Total	0.49	22.00	100.00		Forb Total	0.56	22.40	100.00	
Grass and Forb Total	2.23	100.00			Grass and Forb Total	2.50	100.00		



Appendix A

POISON BUTTES ALLOTMENT

C3-1

Artr-Agsm-Oppo Type

SW exp., 3° slope

8 July 1970

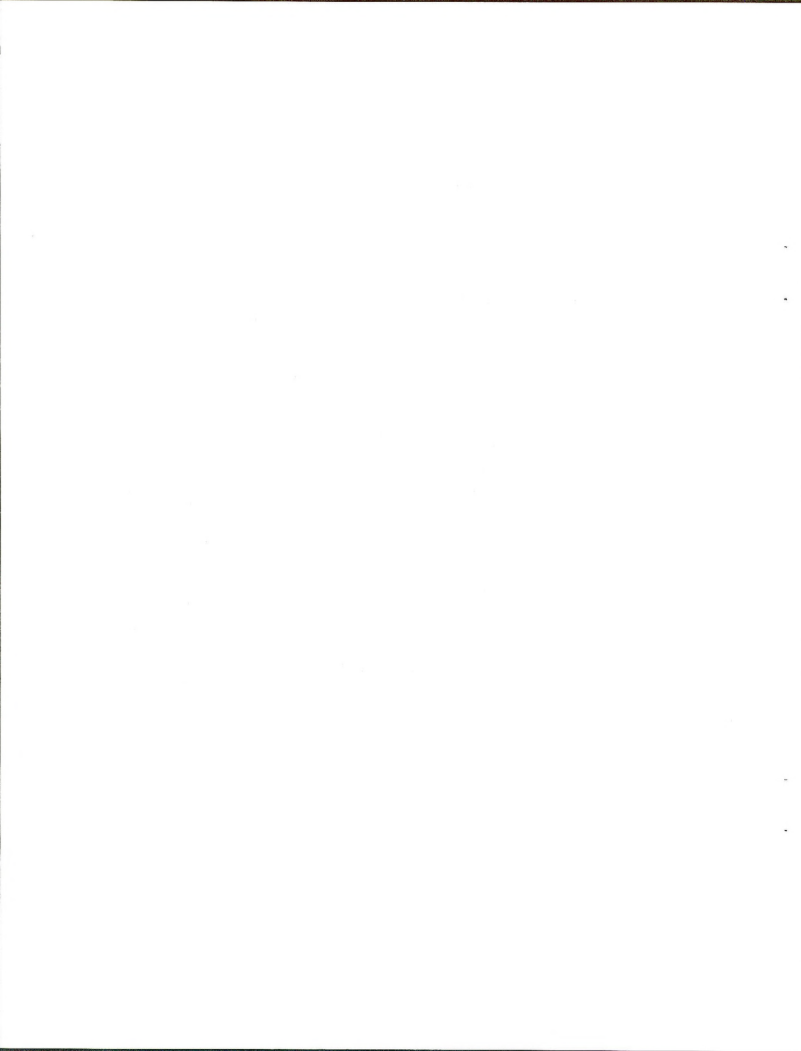
C4-1

Artr-Agsm-Oppo Type

W exp., 3.5° slope

9 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	14.91			80	Artr	12.65			60
Eula	0.01			5					
Shrub Total	14.92				Shrub Total	12.65			
Agsm	0.87	39.57	57.23	85	Agsm	1.53	44.64	70.50	100
Cael	0.11	5.00	7.24	20	Cael	0.03	0.87	1.38	5
Kocr	0.19	8.64	12.50	25	Kocr	0.08	2.33	3.69	5
Pofe	0.11	5.00	7.24	10	Pofe	0.21	6.12	9.68	10
Pose	0.10	4.55	6.58	60	Pose	0.23	6.71	10.60	80
Sihi	0.04	1.82	2.63	15	Sihi	0.01	0.29	0.46	10
Stco	0.10	4.55	6.58	10	Stco	0.08	2.33	3.69	10
Grass Total	1.52	69.12	100.00		Grass Total	2.17	63.29	100.00	
Andi	0.04	1.82	5.88	15	Andi	0.16	4.66	12.70	15
Crepis spp.	0.01	0.45	1.47	10	Crepis spp.	0.04	1.17	3.17	40
Eren	0.03	1.36	4.41	25	Eren	0.03	0.87	2.38	25
Lofo	0.02	0.90	2.94	20	Erov	0.03	0.87	2.38	5
Oppo	0.42	19.09	61.78	35	Oppo	0.80	23.32	63.50	45
Phho	0.05	2.27	7.35	50	Phho	0.02	0.58	1.59	15
Phlo	0.02	0.90	2.94	20	Phlo	0.02	0.58	1.59	15
Spco	0.01	0.45	1.47	10	Spco	0.01	0.29	0.79	5
Alde	0.07	3.18	10.29	70	Trgy	0.02	0.58	1.59	20
Depi	0.01	0.45	1.47	5	Alde	0.09	2.62	7.14	85
Forb Total	0.68	30.88	100.00		Unid.	0.04	1.17	3.17	40
Grass and Forb Total	2.20	100.00			Forb Total	1.26	36.71	100.00	
					Grass and Forb Total	3.43	100.00		



Appendix A

POISON BUTTES ALLOTMENT

C5-1

Artr-Agsm Type
E exp., 0.5° slope
25 June 1970

C6-1

Artr-Agsm Type
E exp., 0.5° slope
25 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arsp	1.05			15	Artr	15.71			75
Artr	7.35			35	Eula	0.08			10
Atnu	2.51			20	Juos	0.05			5
Shrub Total	10.91				Shrub Total	15.84			
Agsm	1.04	47.28	73.77	65	Agsm	0.92	56.47	76.67	75
Orhy	0.08	3.64	5.67	5	Pofe	0.18	11.04	15.00	20
Pose	0.21	9.55	14.89	55	Pose	0.07	4.29	5.83	50
Sihy	0.07	3.18	4.96	25	Sihy	0.02	1.23	1.67	15
Brte	0.01	0.45	0.71	10	Stco	0.01	0.61	0.83	5
Grass Total	1.41	64.10	100.00		Grass Total	1.20	73.64	100.00	
Alac	0.02	0.91	2.53	20	Alac	0.02	1.23	4.65	20
Andi	0.35	15.91	44.30	5	Andi	0.09	5.52	20.90	20
Crepis spp.	0.01	0.45	1.27	10	Arabis spp.	0.01	0.61	2.33	5
Eren	0.04	1.82	5.06	35	Crepis spp.	0.03	1.84	6.98	30
Lofo	0.04	1.82	5.06	35	Eren	0.04	2.45	9.30	40
Oppo	0.15	6.82	18.99	5	Lofo	0.01	0.61	2.33	5
Phho	0.05	2.27	6.33	25	Oppo	0.01	0.61	2.33	5
Phlo	0.03	1.36	3.80	30	Phho	0.05	3.07	11.63	50
Trgy	0.04	1.82	5.06	35	Phlo	0.03	1.84	6.98	25
Alde	0.05	2.27	6.33	45	Trgy	0.03	1.84	6.98	30
Depi	0.01	0.45	1.27	5	Alde	0.04	2.45	9.30	35
Forb Total	0.79	35.90	100.00		Lise	0.03	1.84	6.98	25
Grass and Forb Total	2.20	100.00			Oean	0.03	1.84	6.98	25
					Unid	0.01	0.61	2.33	5
					Forb Total	0.43	26.36	100.00	
					Grass and Forb Total	1.63	100.00		



Appendix A

POISON BUTTES ALLOTMENT

C7-1
Artr-Agsm Type Sprayed
N exp., 2° slope
25 June 1970

C8-1
Artr-Agsm Type Sprayed
NE exp., 0.5° slope
26 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Shrub Total	0.00								
Agsm	3.93	63.70	67.88	100	Artr	3.20			15
Kocr	0.81	13.13	13.99	55					
Pofe	0.57	9.24	9.84	65	Shrub Total	3.20			
Pose	0.47	7.62	8.12	100					
Sihy	0.01	0.16	0.17	5	Agsm	4.31	69.75	76.69	100
					Kocr	0.13	2.10	2.31	20
Grass Total	5.79	93.85	100.00		Pofe	0.31	5.02	5.52	50
Alac	0.01	0.16	2.63	10	Pose	0.51	8.25	9.07	100
Crepis spp.	0.01	0.16	2.63	5	Sihy	0.21	3.40	3.74	50
Eren	0.04	0.65	10.53	40	Stco	0.15	2.43	2.67	15
Oppo	0.11	1.78	28.96	10	Grass Total	5.62	90.95	100.00	
Phho	0.02	0.32	5.26	15	Alac	0.02	0.32	3.57	20
Phlo	0.03	0.49	7.89	25	Andi	0.03	0.49	5.36	5
Trgy	0.01	0.16	2.63	5	Aspu	0.01	0.16	1.79	5
Copa ^{1/}	0.10	1.62	26.32	80	Eren	0.01	0.16	1.79	10
Gara	0.01	0.16	2.63	5	Lofo	0.01	0.16	1.79	10
Lise	0.01	0.16	2.63	5	Oppo	0.01	0.16	1.79	5
Posa	0.03	0.49	7.89	25	Phlo	0.02	0.32	3.57	15
			7.89		Trgy	0.02	0.32	3.57	15
Forb Total	0.38	6.15	100.00		Alde	0.09	1.46	16.07	90
Grass and		100.00			Chat	0.01	0.16	1.79	5
Forb Total	6.17	100.00			Copa ^{1/}	0.03	0.49	5.36	30
					Gypa	0.08	1.29	14.28	75
					Lise	0.04	0.65	7.14	40
					Oean	0.08	1.29	14.28	75
					Posa	0.10	1.62	17.85	100
					Forb Total	0.56	9.05	100.00	
					Grass and				
					Forb Total	6.18	100.00		

^{1/}Migr and Copa, both diminutive annuals similar in appearance are included here.



Appendix A

POISON BUTTES ALLOTMENT

Exclosure I

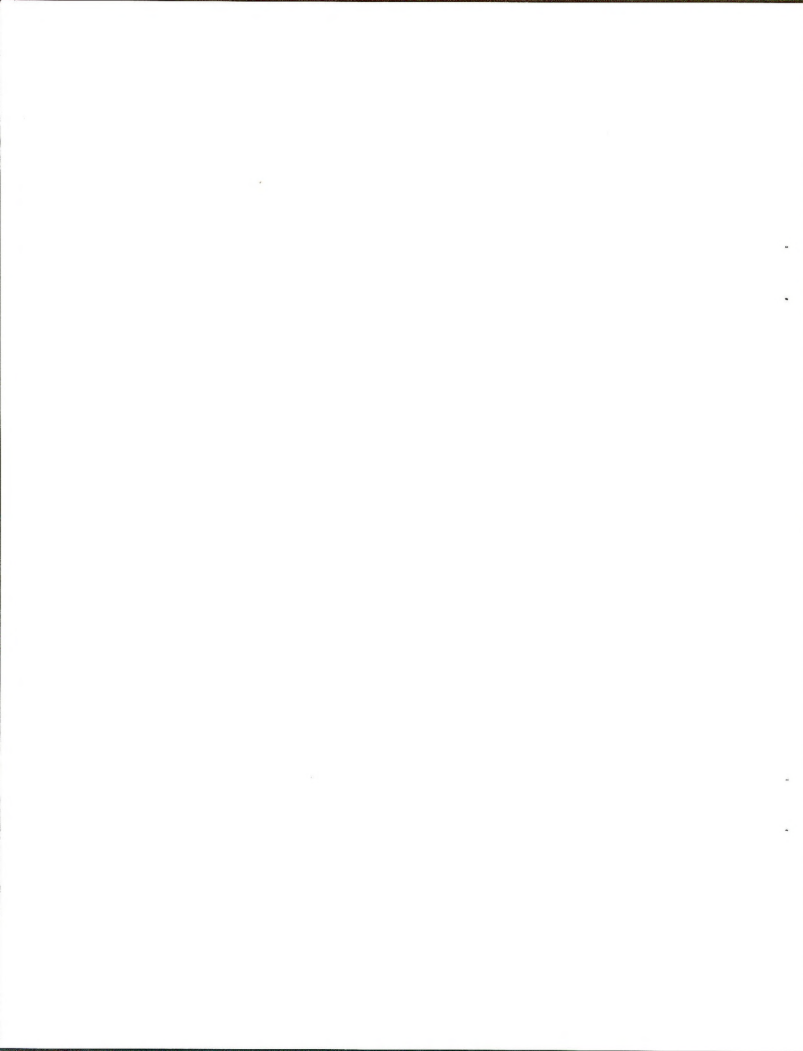
Arthr-Agsm Type - Sprayed
NE exp., 30° slope

Outside
26 June 1970

Inside
26 June 1970

	Cover %	Comp. %	Comp. %	%		Cover %	Comp. %	Comp. %	%
	Avg.	all G&F	by Group	Freq.		Avg.	all G&F	by Group	Freq.
Arthr	7.21			60	Arthr	1.41			40
Shrub Total	7.21				Shrub Total	1.41			
Agsm	4.03	70.22	75.47	100	Agsm	4.53	67.70	70.90	95
Kocr	0.25	4.36	4.68	45	Cael	0.13	1.94	2.03	10
Pofe	0.55	9.58	10.30	45	Kocr	0.06	0.90	0.94	15
Pose	0.23	4.01	4.31	60	Pofe	0.98	14.64	15.34	75
Sihi	0.25	4.36	4.68	50	Pose	0.19	2.84	2.97	90
Stco	0.03	0.52	0.56	5	Sihi	0.45	6.73	7.04	60
					Stco	0.05	0.75	0.78	25
Grass Total	5.34	93.05	100.00		Grass Total	6.39	95.50	100.00	
Alac	0.01	0.17	2.50	5	Alac	0.01	0.15	3.33	10
Andi	0.03	0.52	7.50	5	Andi	0.01	0.15	3.33	5
Asci	0.01	0.17	2.50	10	Arabis spp.	0.01	0.15	3.33	10
Asdr	0.01	0.17	2.50	5	Asci	0.01	0.15	3.33	5
Eren	0.02	0.35	5.00	15	Eren	0.02	0.30	6.67	15
Phlo	0.02	0.35	5.00	20	Oppo	0.05	0.75	16.67	5
Trgy	0.06	1.05	15.00	55	Trgy	0.01	0.15	3.33	10
Alde	0.03	0.52	7.50	25	Alde	0.02	0.30	6.67	20
Copa ^{1/}	0.08	1.39	20.00	75	Copa ^{1/}	0.02	0.30	6.67	15
Cora	0.01	0.17	2.50	5	Cora	0.01	0.15	3.33	5
Gypa	0.04	0.70	10.00	35	Gypa	0.03	0.45	10.00	25
Oean	0.01	0.17	2.50	5	Lise	0.02	0.30	6.67	15
Posa	0.07	1.22	17.50	70	Posa	0.08	1.20	26.67	75
Forb Total	0.40	6.95	100.00		Forb Total	0.30	4.50	100.00	
Grass and					Grass and				
Forb Total	5.74	100.00			Forb Total	6.69	100.00		

^{1/}Migr and Copa, both diminutive annuals similar in appearance are included here.



Appendix A

POISON BUTTES ALLOTMENT

C9-1
Artr-Agsm Type
N exp., 1° slope
26 June 1970

C10-1
Artr-Agsm Type
SE exp., 3° slope
9 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	5.04			90	Artr	11.96			70
Shrub Total	5.04				Shrub Total	11.96			
Agsm	2.09	51.17	59.36	100	Agsm	0.47	41.65	61.03	40
Kocr	0.16	3.92	4.55	25	Pose	0.19	16.81	24.68	40
Orhy	0.05	1.23	1.42	5	Sihy	0.09	7.96	11.69	20
Kocr	0.16	3.92	4.55	25	Brte	0.02	1.77	2.60	20
Pofe	0.41	10.05	11.65	40					
Pose	0.27	6.62	7.67	90	Grass Total	0.77	68.19	100.00	
Sihy St	0.12	2.94	3.41	35	Alac	0.01	0.88	2.78	10
Stco	0.26	6.37	7.39	30	Andi	0.03	2.65	8.33	5
Grass Total	3.52	86.22	100.00		Crepis spp.	0.01	0.88	2.78	5
Alac	0.01	0.25	1.79	10	Eren	0.03	2.65	8.33	30
Andi	0.11	2.70	19.61	20	Lofo	0.01	0.88	2.78	10
Asci	0.01	0.25	1.79	5	Maca	0.01	0.88	2.78	5
Eren	0.05	1.23	8.93	45	Oppo	0.08	7.08	22.22	10
Lofo	0.01	0.25	1.79	10	Phho	0.01	0.88	2.78	10
Oppo	0.10	2.45	17.86	5	Phlo	0.05	4.42	13.89	45
Phho	0.02	0.49	3.57	15	Spco	0.01	0.88	2.78	5
Phlo	0.02	0.49	3.57	15	Trgy	0.01	0.88	2.78	10
Trgy	0.05	1.23	8.93	45	Alde	0.10	8.85	27.77	95
Alde	0.03	0.74	5.36	25	Forb Total	0.36	31.81	100.00	
Copal ^{1/}	0.06	1.47	10.71	60					
Cora	0.01	0.25	1.79	5	Grass and				
Gypa	0.01	0.25	1.79	10	Forb Total	1.13	100.00		
Oean	0.01	0.25	1.79	5					
Posa	0.05	1.23	8.93	50					
Unid.	0.01	0.25	1.79	10					
Unid.	0.01	0.25	1.79	10					
Forb Total	0.56	13.78	100.00						
Grass and									
Forb Total	4.08	100.00							

^{1/}Migr and Copal, both diminutive annuals similar in appearance are included here.



Appendix A

POISON BUTTES ALLOTMENT

Exclosure II

Game & Livestock Exclusion Part

Juos Type

W WS exp., 13° slope

Inside Tr. 1
14 July 1970

Inside Tr. 2
14 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arno	1.45			25	Arno	1.75			10
Cemo	2.25			10	Cemo	5.00			10
Juos	11.25			15	Juos	20.00			25
Shrub Total	14.95				Shrub Total	26.75			
Agsm	0.15	10.49	13.51	10	Agsp	0.12	7.75	9.68	25
Agsp	0.34	23.76	30.63	30	Cafi	0.25	16.13	20.16	5
Cafi	0.30	20.98	27.03	5	Orhy	0.41	26.41	33.07	20
Kocr	0.01	0.70	0.90	5	Pofe	0.33	21.29	26.61	20
Pofe	0.25	17.48	22.52	10	Pose	0.13	8.39	10.48	15
Pose	0.06	4.20	5.41	10					
Grass Total	1.11	77.61	100.00		Grass Total	1.24	79.97	100.00	
Arfe	0.03	2.10	9.38	25	Asdi	0.02	1.29	6.44	20
Asdi	0.02	1.40	6.25	20	Aste	0.01	0.65	3.23	5
Aste	0.02	1.40	6.25	15	Crfe	0.01	0.65	3.23	5
Crepis spp.	0.01	0.70	3.13	10	Erum	0.02	1.29	6.44	15
Crfc	0.01	0.70	3.13	5	Oppo	0.20	12.90	64.51	5
Erum	0.01	0.70	3.13	10	Phau	0.01	0.65	3.23	5
Ermi	0.01	0.70	3.13	5	Phho	0.01	0.65	3.23	10
Haac	0.03	2.10	9.38	5	Phlo	0.01	0.65	3.23	5
Oppo	0.10	6.99	31.20	5	Trgy	0.01	0.65	3.23	5
Pefr	0.01	0.70	3.13	5	Alde	0.01	0.65	3.23	5
Phho	0.03	2.10	9.38	25	Forb Total	0.31	20.03	100.00	
Trgy	0.01	0.70	3.13	5					
Alde	0.02	1.40	6.25	15	Grass and				
Chat	0.01	0.70	3.13	10	Forb Total	1.55	100.00		
Forb Total	0.32	22.39	100.00						
Grass and									
Forb Total	1.43	100.00							



Appendix A

POISON BUTTES ALLOTMENT

Exclosure II

Game & Livestock Exclusion Part

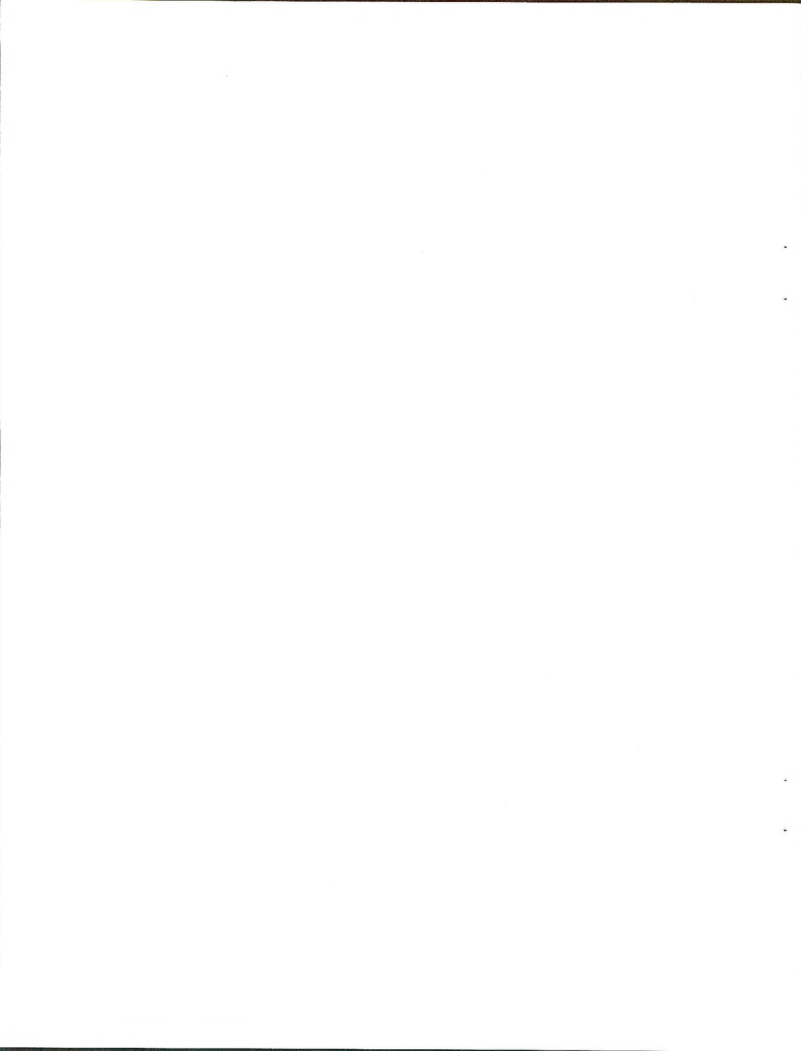
Juos Type

W WS exp., 13° slope

Outside Tr. 1
16 July 1970

Outside Tr. 2
16 July 1970

	Cover %	Comp. %	Comp. %	%		Cover %	Comp. %	Comp. %	%
	Avg.	all G&F	by Group	Freq.		Avg.	all G&F	by Group	Freq.
Arno	5.06			50	Arno	1.41			30
Juos	47.50			60	Cemo	0.40			5
					Juos	40.00			40
Shrub Total	52.56				Shrub Total	41.81			
Agsp	0.65	36.93	46.10	45	Agsp	0.36	19.56	31.03	20
Cafi	0.08	4.55	5.67	5	Hija	0.05	2.72	4.31	5
Kocr	0.12	6.82	8.51	25	Kocr	0.03	1.63	2.59	5
Orhy	0.03	1.70	2.13	5	Orhy	0.40	21.76	34.49	15
Pofe	0.49	27.84	34.75	30	Pofe	0.11	5.98	9.48	10
Pose	0.04	2.27	2.84	15	Pose	0.21	11.41	18.10	25
Grass Total	1.41	80.11	100.00		Grass Total	1.16	63.06	100.00	
Andi	0.01	0.57	2.86	5	Arabis spp.	0.01	0.54	1.47	5
Arabis spp.	0.01	0.57	2.86	5	Arfe	0.12	6.52	17.65	25
Arfe	0.03	1.70	8.57	25	Crfc	0.05	2.72	7.35	5
Asdi	0.02	1.14	5.71	15	Cyac	0.01	0.54	1.47	5
Erea	0.01	0.57	2.86	10	Erum	0.03	1.63	4.41	5
Lofo	0.01	0.57	2.86	5	Haac	0.35	19.02	51.48	15
Oppo	0.20	11.36	57.14	15	Oppo	0.02	1.09	2.94	15
Phho	0.03	1.70	8.57	25	Phho	0.03	1.63	4.41	25
Phlo	0.02	1.14	5.71	15	Trgy	0.01	0.54	1.47	5
Trgy	0.01	0.57	2.86	10	Alde	0.03	1.63	4.41	25
Forb Total	0.35	19.89	100.00		Chat	0.01	0.54	1.47	5
					Crwa	0.01	0.54	1.47	10
Grass and					Forb Total	0.68	36.94	100.00	
Forb Total	1.76	100.00			Grass and				
					Forb Total	1.84	100.00		



Appendix A

POISON BUTTES ALLOTMENT

Exclosure II

Livestock Exclusion Part

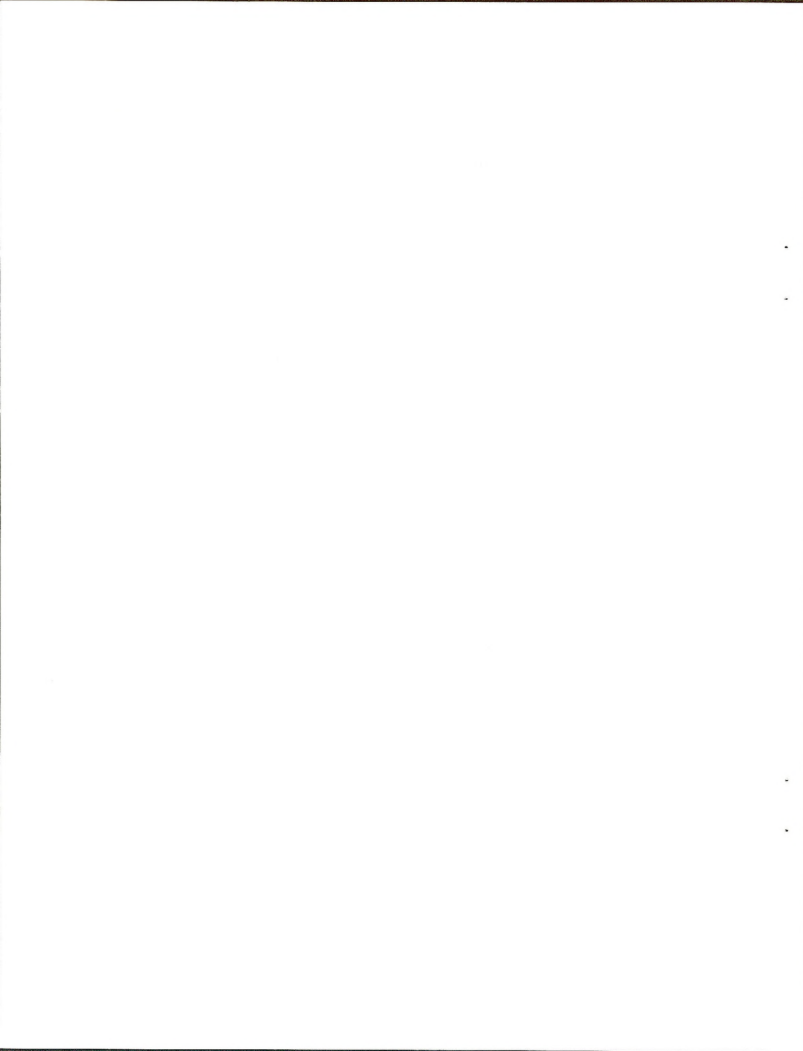
Juos Type

E SE exp., 3-13° slope

Inside Tr. 1
17 July 1970

Inside Tr. 2
18 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	12.31			65	Artr	9.45			55
Juos	9.00			10	Juos	17.50			30
Shrub Total	21.31				Shrub Total	26.95			
Agsm	0.11	8.09	8.59	15	Agsp	0.01	1.45	2.27	5
Kocr	0.05	3.68	3.91	5	Pofe	0.20	28.99	45.45	10
Pofe	0.96	70.57	75.00	20	Pose	0.01	1.45	2.27	10
Pose	0.13	9.56	10.16	15	Sihi	0.21	30.42	47.74	30
Sihi	0.02	1.47	1.56	15	Arte	0.01	1.45	2.27	5
Stco	0.01	0.74	0.78	5					
Grass Total	1.28	94.11	100.00		Grass Total	0.44	63.76	100.00	
Arabis spp.	0.01	0.74	12.50	5	Arabis spp.	0.01	1.45	4.00	5
Eren	0.01	0.74	12.50	10	Arfe	0.01	1.45	4.00	5
Phho	0.02	1.47	25.00	15	Asdi	0.01	1.45	4.00	5
Alde	0.04	2.94	50.00	35	Cach	0.01	1.45	4.00	5
Forb Total	0.08	58.90	100.00		Crfc	0.10	14.49	40.00	5
Grass and					Eren	0.01	1.45	4.00	10
Forb Total	1.36	100.00			Phho	0.02	2.90	8.00	20
					Trgy	0.02	2.90	8.00	15
					Alde	0.05	7.25	20.00	45
					Gisi	0.01	1.45	4.00	10
					Forb Total	0.25	36.24	100.00	
					Grass and				
					Forb Total	0.69	100.00		



Appendix A

POISON BUTTES ALLOTMENT

Exclosure II

Livestock Exclusion Part

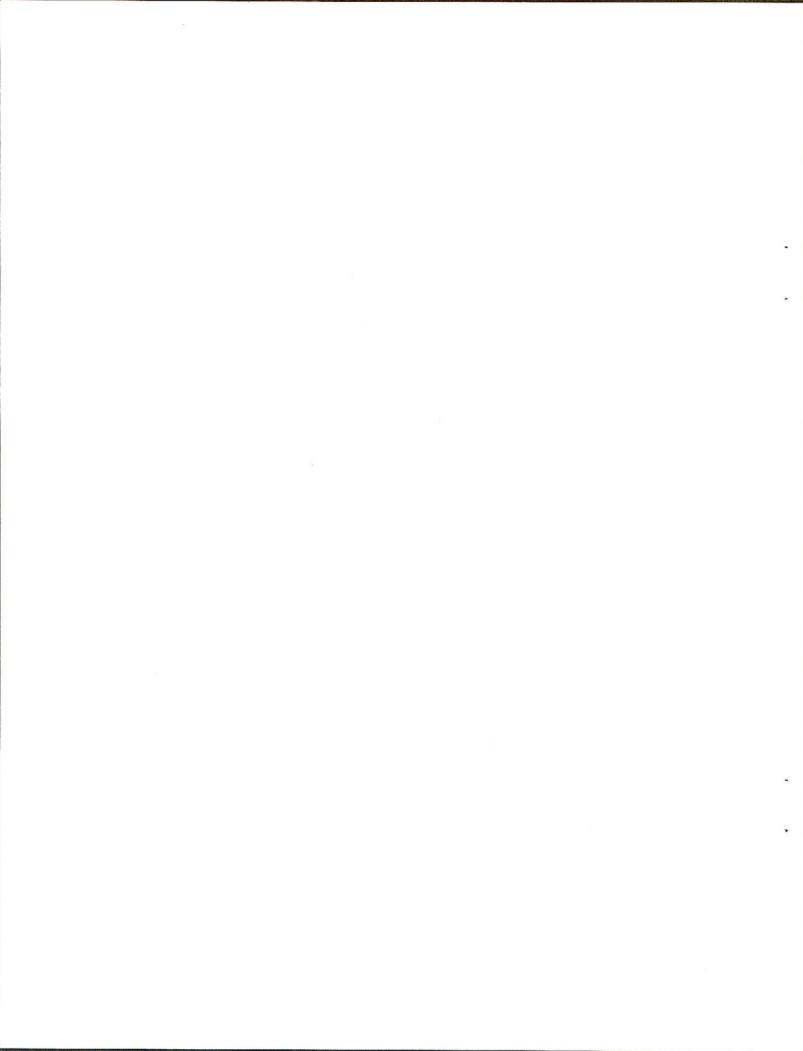
Juos Type

E SE exp., 3-13° slope

Outside Tr. 1
18 July 1970

Outside Tr. 2
18 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	5.65			25	Artr	10.81			55
Juos	26.50			40	Juos	22.75			35
Shrub Total	32.15				Shrub Total	33.56			
Agsm	1.03	48.82	57.58	60	Agsm	0.01	0.81	1.00	5
Agsp	0.08	3.79	4.47	5	Orhy	0.02	1.61	2.00	15
Kocr	0.10	4.74	5.59	5	Pofe	0.08	6.45	8.00	15
Orhy	0.11	5.21	6.15	15	Pose	0.10	8.06	10.00	5
Pofe	0.10	4.74	5.59	10	Sihy	0.79	63.70	79.00	45
Pose	0.17	8.06	9.50	30					
Stco	0.20	9.48	11.17	10	Grass Total	1.00	80.63	100.00	
Grass Total	1.79	84.84	100.00		Andi	0.10	8.06	41.65	5
Andi	0.15	7.11	46.85	10	Arabis spp.	0.01	0.81	4.17	5
Arfe	0.01	0.47	3.13	10	Crfc	0.01	0.81	4.17	10
Asdi	0.01	0.47	3.13	5	Eren	0.01	0.81	4.17	5
Oppo	0.05	2.37	15.63	5	Oppo	0.05	4.03	20.83	5
Phho	0.01	0.47	3.13	5	Phho	0.01	0.81	4.17	10
Phlo	0.03	1.42	9.38	30	Trgy	0.01	0.81	4.17	10
Trgy	0.02	0.95	6.25	15	Alde	0.03	2.42	12.50	30
Alde	0.04	1.90	12.50	40	Gisi	0.01	0.81	4.17	5
Forb Total	0.32	15.16	100.00		Forb Total	0.24	19.37	100.00	
Grass and Forb Total	2.11	100.00			Grass and Forb Total	1.24	100.00		



Appendix A

OPPENHIEMER ALLOTMENT - EAST PASTURE

C1-1
Artr-Agsm-Oppo Type
SW exp., 3° slope
8 July 1970

C2-1
Artr-Agsm Type
SW exp., 3° slope
26 June 1970

	Cover %	Comp. %	Comp. %	%		Cover %	Comp. %	Comp. %	%
	Avg.	all G&F	by Group	Freq.		Avg.	all G&F	by Group	Freq.
Artr	3.57			35	Artr	8.11			65
Shrub Total	3.57				Shrub Total	8.11			
Agsm	1.51	39.32	69.91	90	Agsm	0.34	29.82	64.15	65
Cael	0.08	2.08	3.70	10	Pose	0.15	13.16	28.30	65
Pose	0.05	1.30	2.31	45	Sihy	0.02	1.75	3.77	15
Sihy	0.14	3.65	6.48	25	Stco	0.01	0.88	1.89	5
Stco	0.36	9.38	16.67	35	Brte	0.01	0.88	1.89	5
Brte	0.02	0.52	0.93	15					
Grass Total	2.16	56.25	100.00		Grass Total	0.53	46.49	100.00	
Alac	0.02	0.52	1.19	20	Alte	0.01	0.88	1.64	10
Andi	0.01	0.26	0.60	5	Andi	0.03	2.63	4.92	5
Eren	0.01	0.26	0.60	10	Eren	0.03	2.63	4.92	25
Erov	0.01	0.26	0.60	5	Erov	0.03	2.63	4.92	5
Oppo	1.46	38.03	86.87	65	Haac	0.10	8.77	16.39	5
Phlo	0.03	0.78	1.79	30	Lofo	0.02	1.75	3.28	20
Spco	0.01	0.26	0.60	5	Oppo	0.25	21.93	40.97	10
Trgy	0.01	0.26	0.60	5	Phho	0.05	4.39	8.20	50
Alde	0.08	2.08	4.76	80	Phlo	0.04	3.51	6.56	40
Depi	0.01	0.26	0.60	5	Spco	0.01	0.88	1.64	10
Gisi	0.02	0.52	1.19	15	Trgy	0.03	2.63	4.92	30
Unid.	0.01	0.26	0.60	5	Alde	0.01	0.88	1.64	10
Forb Total	1.68	43.75	100.00		Forb Total	0.61	53.51	100.00	
Grass and Forb Total	3.84	100.00			Grass and Forb Total	1.14	100.00		



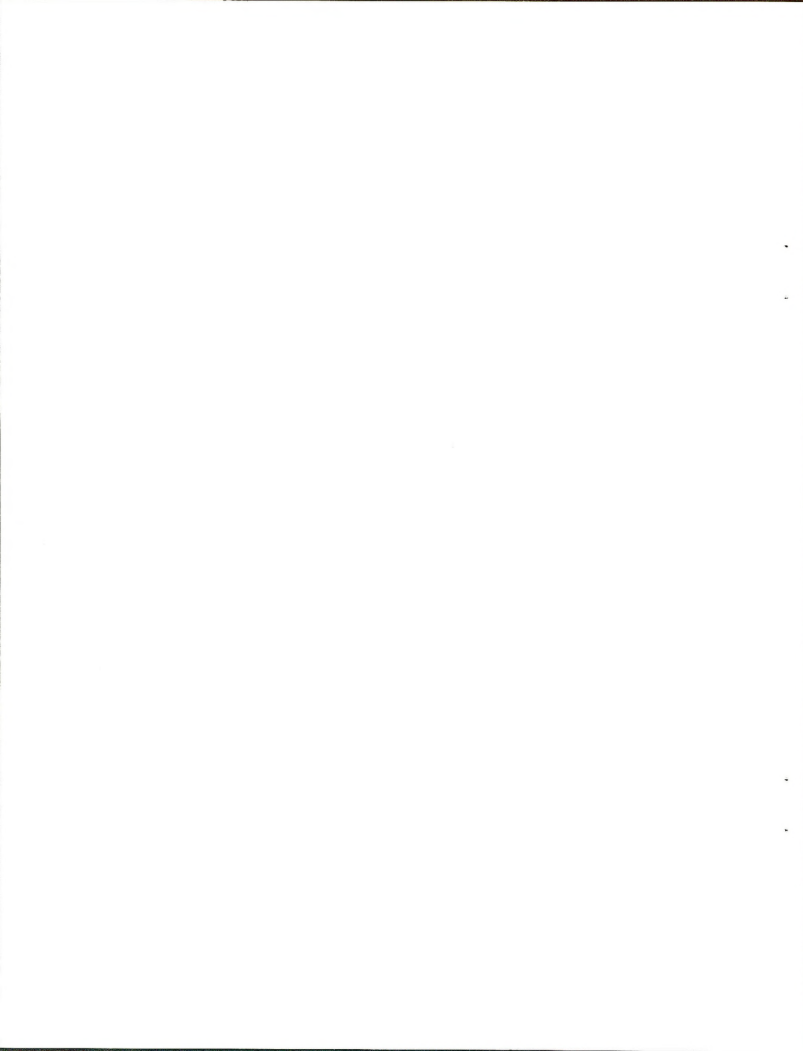
Appendix A

OPPENHIEMER ALLOTMENT - EAST PASTURE

C3-1
Artr-Agsm Type-Sprayed
N exp., 3° slope
26 June 1970

C4-1
Artr-Agsm Type
SW exp., 0.5° slope
24 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	0.51			10	Artr	9.87			70
Shrub Total	0.51				Shrub Total	9.87			
Agsm	2.48	76.77	83.78	85	Agsm	0.63	30.13	49.21	55
Pose	0.25	7.74	8.45	80	Kocr	0.01	0.48	0.78	5
Sihi	0.22	6.81	7.43	50	Pose	0.45	21.53	35.16	60
Brte	0.01	0.31	0.34	5	Sihi	0.06	2.87	4.69	20
					Stco	0.13	6.22	10.16	15
Grass Total	2.96	91.63	100.00		Grass Total	1.28	61.23	100.00	
Alac	0.01	0.31	3.70	10	Andi	0.13	6.22	16.05	10
Crepis spp.	0.01	0.31	3.70	10	Arabis spp.	0.02	0.96	2.47	15
Eren	0.05	1.55	18.52	50	Aspu	0.01	0.48	1.23	5
Maca	0.01	0.31	3.70	5	Eren	0.04	1.91	4.94	35
Oppo	0.03	0.93	11.11	10	Erov	0.03	1.44	3.70	10
Phho	0.01	0.31	3.70	10	Maca	0.01	0.48	1.23	5
Phlo	0.02	0.62	7.41	15	Oppo	0.41	19.62	50.64	30
Spco	0.01	0.31	3.70	5	Phho	0.09	4.31	11.11	70
Trgy	0.01	0.31	3.70	5	Spco	0.01	0.48	1.23	10
Chat	0.01	0.31	3.70	10	Alde	0.05	2.39	6.17	50
Crke	0.03	0.93	11.11	25	Chat	0.01	0.48	1.23	5
Gara	0.07	2.17	25.95	45					
Forb Total	0.27	8.37	100.00		Forb Total	0.81	38.77	100.00	
Grass and Forb Total	3.23	100.00			Grass and Forb Total	2.09	100.00		



Appendix A

OPPENHIEMER ALLOTMENT - EAST PASTURE

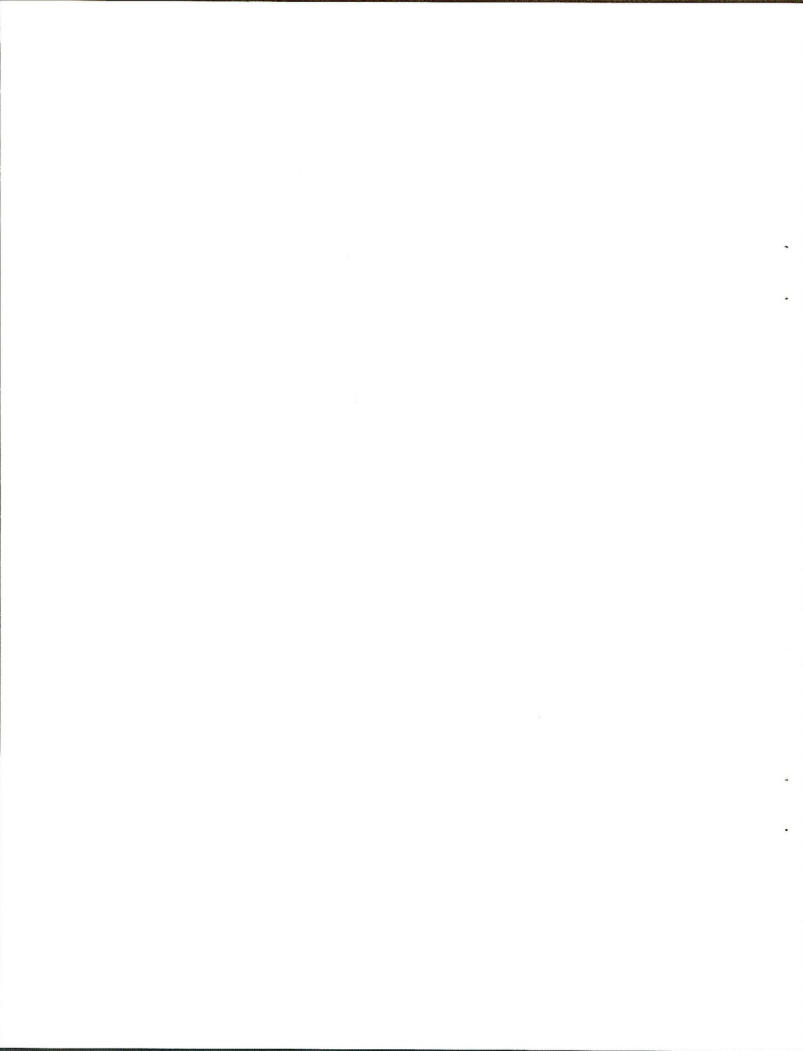
C5-1

Artr-Agsm Type-Sprayed
NE exp., 0.5° slope
25 June 1970

C6-1

Artr-Agsm Type-Sprayed
N NE exp., 1.5° slope
25 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	10.24			55	Artr	5.91			45
Shrub Total	10.24				Shrub Total	5.91			
Agsm	2.14	73.55	82.63	95	Agsm	0.91	48.40	63.20	85
Pofe	0.13	4.47	5.02	15	Orhy	0.10	5.32	6.94	5
Pose	0.23	7.90	8.88	80	Pose	0.40	21.28	27.78	85
Sihy	0.09	3.09	3.47	20	Sihy	0.03	1.60	2.08	10
Grass Total	2.59	89.01	100.00		Grass Total	1.44	76.60	100.00	
Alac	0.01	0.34	3.13	5	Andi	0.03	1.60	6.82	5
Arabis spp.	0.01	0.34	3.13	5	Aspu	0.01	0.53	2.27	5
Crepis spp.	0.03	1.03	9.38	25	Eren	0.04	2.13	9.09	40
Dene	0.01	0.34	3.13	5	Lofo	0.02	1.06	4.55	15
Eren	0.02	0.69	6.25	15	Oppo	0.20	10.64	45.45	15
Oppo	0.10	3.44	31.21	5	Phho	0.05	2.66	11.36	10
Phho	0.02	0.69	6.25	15	Phlo	0.05	2.66	11.36	50
Phlo	0.03	1.03	9.38	30	Trgy	0.02	1.06	4.55	15
Trgy	0.01	0.34	3.13	10	Alde	0.02	1.06	4.55	15
Alde	0.02	0.69	6.25	20					
Cora	0.02	0.69	6.25	15	Forb Total	0.44	23.40	100.00	
Lare	0.01	0.34	3.13	10					
Lise	0.01	0.34	3.13	5	Grass and				
Unid.	0.02	0.69	6.25	15	Forb Total	1.88	100.00		
Forb Total	0.32	10.99	100.00						
Grass and									
Forb Total	2.91	100.00							



Appendix A

OPPENHIEMER ALLOTMENT - EAST PASTURE

C7-1
Artr-Agsm Type
E exp., 0.25° slope
25 June 1970

C8-1
Juos Type
S exp., 10° slope
25 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	21.55			85	Arno	6.11			45
Shrub Total	21.55				Cemo	2.50			5
Agsm	0.44	34.39	43.57	85	Shrub Total	8.61			
Pofe	0.10	7.81	9.90	5	Agsp	0.23	19.01	39.66	15
Pose	0.25	19.53	24.75	60	Orhy	0.31	25.61	53.45	25
Sihy	0.22	17.19	21.78	35	Pose	0.04	3.31	6.89	15
Grass Total	1.01	78.92	100.00		Grass Total	0.58	47.93	100.00	
Alac	0.01	0.78	3.70	10	Andi	0.03	2.48	4.76	5
Andi	0.01	0.78	3.70	5	Arabis spp.	0.01	0.83	1.59	5
Arabis spp.	0.02	1.56	7.41	15	Arfe	0.04	3.31	6.35	35
Crepis spp.	0.01	0.78	3.70	5	Crfe	0.01	0.83	1.59	5
Eren	0.03	2.34	11.11	25	Eren	0.01	0.83	1.59	5
Oppo	0.10	7.81	37.06	5	Haac	0.42	34.70	66.66	40
Phho	0.04	3.13	14.81	40	Oppo	0.08	6.61	12.70	5
Phlo	0.01	0.78	3.70	10	Phho	0.03	2.48	4.76	30
Trgy	0.02	1.56	7.41	20	Forb Total	0.63	52.07	100.00	
Alde	0.01	0.78	3.70	5	Grass and				
Lare	0.01	0.78	3.70	10	Forb Total	1.21	100.00		
Shrub Total	0.27	21.08	100.00						
Grass and									
Forb Total	1.28	100.00							



Appendix A

OPPENHIEMER ALLOTMENT - EAST PASTURE

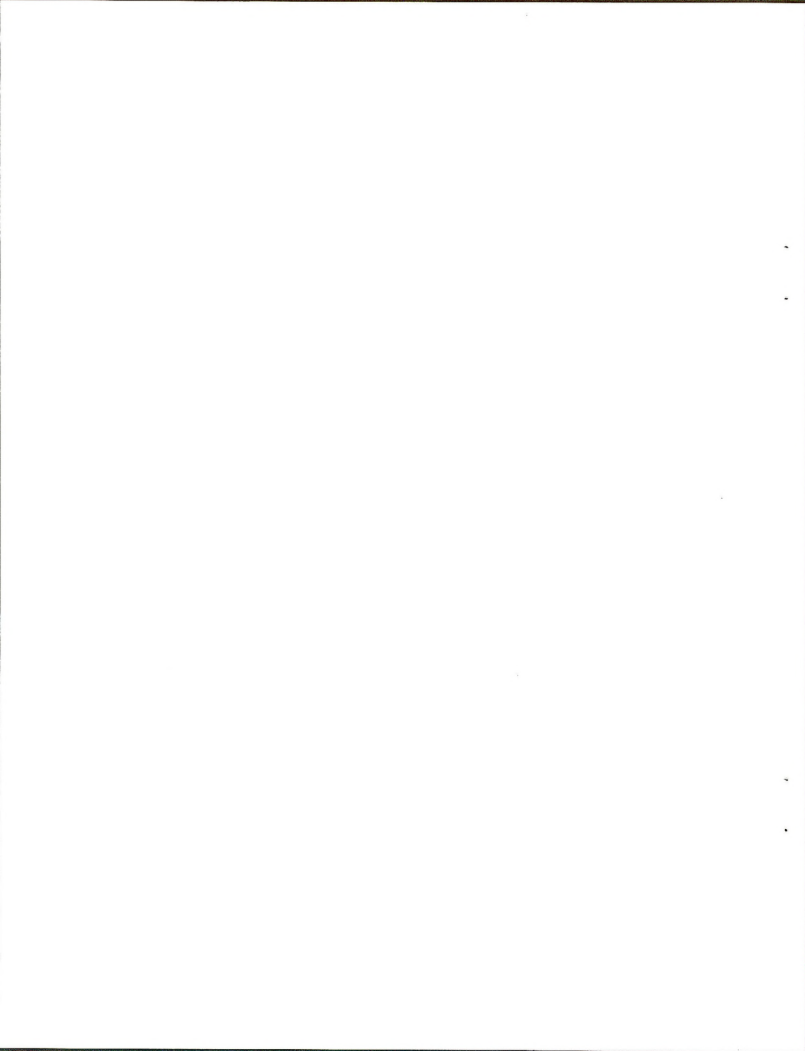
Exclosure

Artr-Agsm Type-Sprayed
SE exp., 3° slope

Outside
6 July 1970

Inside
6 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	5.01			30	Artr	4.45			40
Shrub Total	5.01				Koam	0.05			5
Agsm	2.06	52.51	60.06	95	Shrub Total	4.50			
Cael	0.84	21.43	24.49	65	Agsm	2.00	48.54	53.20	95
Pose	0.34	8.67	9.91	90	Cael	1.21	29.37	32.18	90
SiHy	0.14	3.57	4.08	30	Orhy	0.05	1.21	1.33	5
Stco	0.05	1.28	1.46	5	Pose	0.46	11.17	12.23	80
Grass Total	3.43	87.46	100.00		SiHy	0.04	0.97	1.06	15
Arabis spp.	0.01	0.26	2.04	5	Grass Total	3.76	91.26	100.00	
Crepis spp.	0.01	0.26	2.04	5	Andi	0.03	0.73	8.33	10
Eren	0.01	0.26	2.04	10	Crepis spp.	0.01	0.24	2.78	5
Oppo	0.35	8.93	71.44	10	Eren	0.02	0.49	5.56	15
Phho	0.01	0.26	2.04	10	Oppo	0.15	3.64	41.65	5
Trgy	0.04	1.02	8.16	40	Phho	0.06	1.46	16.67	40
Alde	0.03	0.77	6.12	25	Phlo	0.02	0.49	5.56	15
Cora	0.01	0.26	2.04	5	Trgy	0.04	0.97	11.11	35
Lare	0.01	0.26	2.04	5	Cora	0.01	0.24	2.78	5
Unid.	0.01	0.26	2.04	5	Lare	0.01	0.24	2.78	10
Forb Total	0.49	12.54	100.00		Unid.	0.01	0.24	2.78	5
Grass and Forb Total	3.92	100.00			Forb Total	0.36	8.74	100.00	
					Grass and Forb Total	4.12	100.00		



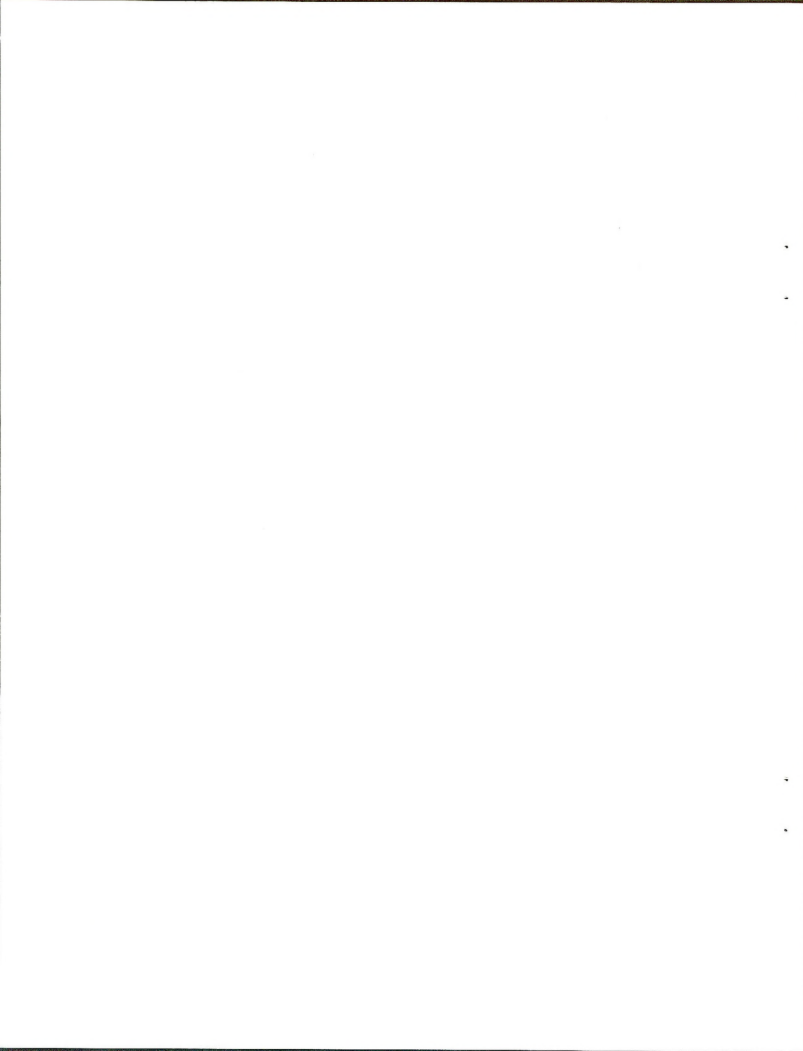
Appendix A

OPPENHIEMER ALLOTMENT - WEST PASTURE

C1-1
Artr-Agsm Type
SE exp., 1^o slope
4 July 1970

C2-1
Artr-Agsm Type-Sprayed
N NE exp., 2^o slope
6 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arsr	1.40			30	Artr	3.54			60
Artr	5.80			35	Atco	0.25			5
Shrub Total	7.20				Shrub Total	3.79			
Agsm	0.09	8.11	18.37	30	Agsm	1.53	52.78	67.40	100
Orhy	0.17	15.32	34.69	35	Orhy	0.01	0.34	0.44	10
Pose	0.18	16.22	36.74	30	Pose	0.50	17.24	22.03	80
Sihi	0.05	4.50	10.20	30	Sihi	0.22	7.59	9.69	50
					Brte	0.01	0.34	0.44	10
Grass Total	0.49	44.15	100.00		Grass Total	2.27	78.29	100.00	
Andi	0.10	9.01	16.13	5	Crepis spp.	0.02	0.69	3.17	20
Eren	0.03	2.70	4.84	30	Eren	0.06	2.07	9.52	55
Oppo	0.40	36.04	64.53	10	Oppo	0.33	11.38	52.39	20
Phlo	0.05	4.50	8.06	50	Phho	0.06	2.07	9.52	35
Spco	0.01	0.90	1.61	10	Phlo	0.04	1.38	6.35	40
Trgy	0.01	0.90	1.61	5	Trgy	0.02	0.69	3.17	15
Alde	0.01	0.90	1.61	5	Alde	0.07	2.41	11.11	70
Cora	0.01	0.90	1.61	5	Cora	0.01	0.34	1.59	5
Forb Total	0.62	55.85	100.00		Lare	0.01	0.34	1.59	5
					Unid.	0.01	0.34	1.59	5
Grass and Forb Total	1.11	100.00			Forb Total	0.63	21.71	100.00	
					Grass and Forb Total	2.90	100.00		



Appendix A

OPPENHIEMER ALLOTMENT -WEST PASTURE

C3-1

Artr-Agsm Type-Sprayed

N exp., 0.25° slope

4 July 1970

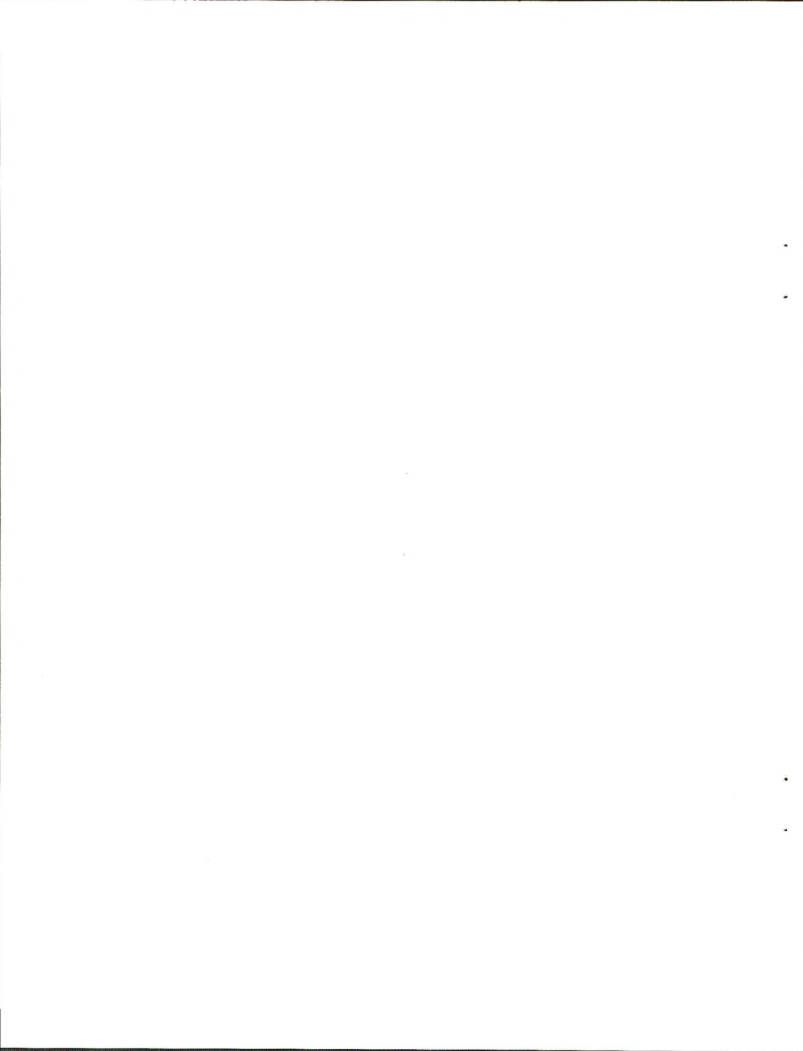
C4-1

Artr-Agsm Type

N exp., 2° slope

4 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	1.29			40	Artr	5.86			65
Shrub Total	1.29				Shrub Total	5.86			
Agsm	2.70	69.02	82.08	100	Agsm	0.44	41.13	51.16	60
Orhy	0.08	2.05	2.43	5	Pose	0.30	28.04	34.88	65
Pose	0.43	11.00	13.07	65	Sihy	0.02	1.87	2.33	20
Sihy	0.01	0.26	0.30	5	Stco	0.10	9.35	11.63	5
Stco	0.06	1.53	1.82	10					
Brte	0.01	0.26	0.30	5	Grass Total	0.86	80.39	100.00	
Grass Total	3.29	84.12	100.00		Andi	0.01	0.93	4.76	5
Eren	0.03	0.77	4.84	25	Crepis spp.	0.01	0.93	4.76	10
Oppo	0.43	11.00	69.36	20	Eren	0.03	2.80	14.29	30
Phho	0.01	0.26	1.61	10	Erov	0.03	2.80	14.29	5
Phlo	0.03	0.77	4.84	30	Phho	0.04	3.74	19.05	35
Trgy	0.01	0.26	1.61	5	Phlo	0.02	1.87	9.52	15
Alde	0.08	2.05	12.90	80	Toin	0.01	0.93	4.76	5
Lare	0.03	0.77	4.84	30	Trgy	0.02	1.87	9.52	20
Forb Total	0.62	15.88	100.00		Alde	0.04	3.74	19.05	40
Grass and Forb Total	3.91	100.00			Forb Total	0.21	19.61	100.00	
					Grass and Forb Total	1.07	100.00		



Appendix A

OPPENHIEMER ALLOTMENT - WEST PASTURE

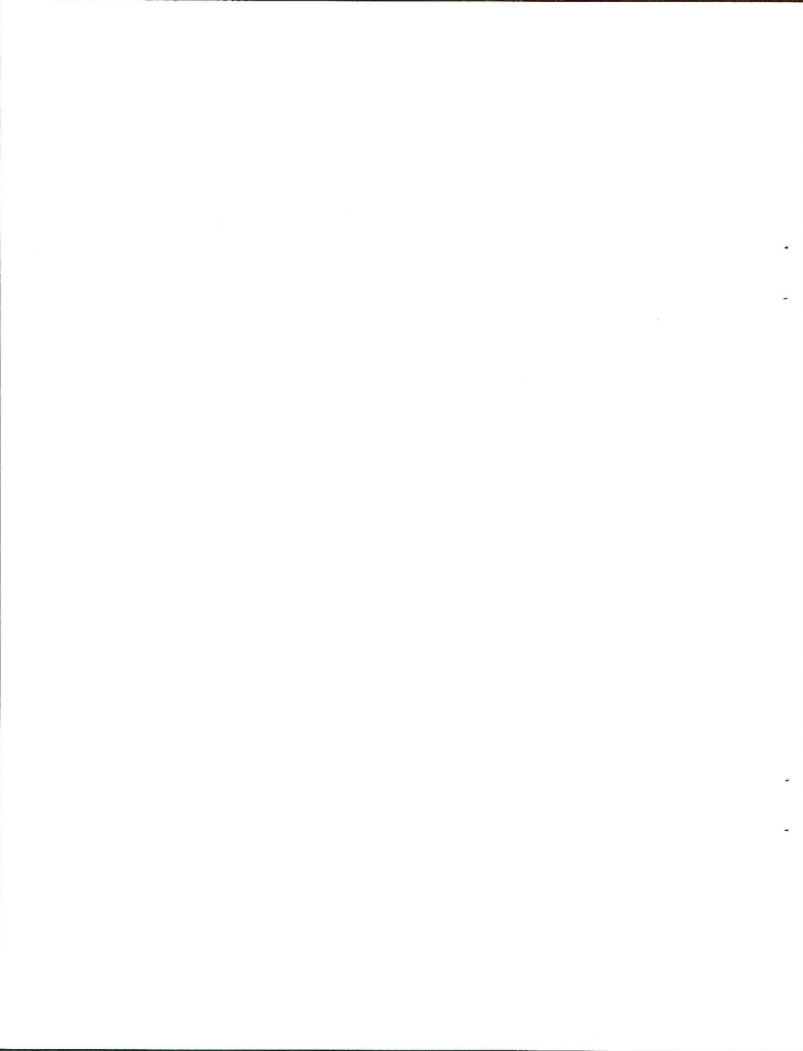
C5-1

Artr-Agsm Type
SE exp., 0.75° slope
7 July 1970

C6-1

Artr-Agsm Type
N NE exp., 1° slope
25 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	5.00			45	Arsp	0.10			5
Shrub Total	5.00				Artr	8.13			55
					Atga	0.15			10
Agsm	0.87	38.69	65.91	85	Chvi	0.01			5
Pose	0.21	9.33	15.91	55	Shrub Total	8.39			
Sihy	0.04	1.78	3.03	15	Agsm	0.85	49.44	68.55	60
Stco	0.20	8.89	15.15	40	Orhy	0.06	3.49	4.84	20
Grass Total	1.32	58.69	100.00		Pose	0.24	13.95	19.35	60
Andi	0.05	2.22	5.38	25	Sihy	0.09	5.23	7.26	30
Arabis spp.	0.01	0.44	1.08	5	Grass Total	1.24	72.11	100.00	
Crepis spp.	0.01	0.44	1.08	5	Andi	0.01	0.58	2.08	10
Eren	0.01	0.44	1.08	5	Arabis spp.	0.01	0.58	2.08	10
Erov	0.06	2.67	6.45	15	Crepis spp.	0.01	0.58	2.08	10
Oppo	0.58	25.78	62.34	25	Eren	0.02	1.16	4.17	15
Phho	0.07	3.11	7.53	50	Lofo	0.01	0.58	2.08	5
Phlo	0.03	1.33	3.23	25	Oppo	0.30	17.44	62.51	10
Trgy	0.01	0.44	1.08	10	Phho	0.02	1.16	4.17	20
Alde	0.10	4.44	10.75	100	Phlo	0.06	3.49	12.50	60
Forb Total	0.93	41.31	100.00		Trgy	0.03	1.74	6.25	25
Grass and					Cora	0.01	0.58	2.08	5
Forb Total	2.25	100.00			Forb Total	0.48	27.89	100.00	
					Grass and				
					Forb Total	1.72	100.00		



Appendix A

OPPENHIEMER ALLOTMENT -WEST PASTURE

C7-1

Artr-Agsm Type
S exp., 1° slope
6 July 1970

C9-1

Juos Type
S exp., variable slope (3-8°)
7 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	8.18			80	Arno	8.05			45
					Artr	0.55			10
Shrub Total	8.18				Cemo	5.91			20
Agsm	0.19	23.16	29.69	40	Shrub Total	14.51			
Orhy	0.19	23.16	29.69	35					
Pose	0.09	10.98	14.06	20	Agsm	0.16	12.40	14.29	25
Sihy	0.09	10.98	14.06	20	Agsp	0.69	53.48	61.60	50
Stco	0.08	9.76	12.50	10	Kocr	0.01	0.78	0.89	5
					Pofe	0.20	15.50	17.86	15
Grass Total	0.64	78.04	100.00		Pose	0.06	4.65	5.36	15
Eren	0.04	4.88	22.22	35	Grass Total	1.12	86.81	100.00	
Phho	0.01	1.22	5.56	10					
Phlo	0.03	3.66	16.67	25	Arfe	0.01	0.78	5.88	10
Spco	0.01	1.22	5.56	10	Eren	0.01	0.78	5.88	10
Trgy	0.04	4.88	22.22	15	Haac	0.06	4.65	35.29	10
Alde	0.05	6.10	27.77	45	Phho	0.04	3.10	23.53	20
					Trgy	0.05	3.88	29.42	45
Forb Total	0.18	21.96	100.00		Forb Total	0.17	13.19	100.00	
Grass and									
Forb Total	0.82	100.00			Grass and				
					Forb Total	1.29	100.00		



Appendix A

OPPENHIEMER ALLOTMENT - WEST PASTURE

Exclosure

Artr-Agsm Type-No Spray
E exp., 30° slope

Outside
5 July 1970

Inside
6 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	3.66			55	Artr	6.50			45
Atco	0.01			5	Atco	3.50			10
Shrub Total	3.67				Shrub Total	10.00			
Agsm	0.97	34.87	47.78	90	Agsm	1.59	54.27	60.92	95
Cael	0.03	1.08	1.48	10	Cael	0.32	10.92	12.26	65
Kocr	0.05	1.80	2.46	10	Pose	0.66	22.53	25.29	90
Orhy	0.10	3.60	4.93	20	Sihy	0.04	1.37	1.53	15
Pose	0.46	16.55	22.66	85					
Stco	0.42	15.11	20.69	65	Grass Total	2.61	89.09	100.00	
Grass Total	2.03	73.01	100.00		Andi	0.11	3.75	34.35	25
Andi	0.04	1.44	5.33	15	Crepis spp.	0.02	0.68	6.25	15
Aspu	0.01	0.36	1.33	5	Eren	0.04	1.37	12.50	40
Eren	0.05	1.80	6.67	45	Erov	0.01	0.34	3.13	5
Erov	0.03	1.08	4.00	10	Oppo	0.03	1.02	9.38	5
Haac	0.10	3.60	13.33	5	Phho	0.04	1.37	12.50	35
Oppo	0.35	12.59	46.67	10	Spc0	0.01	0.34	3.13	10
Phho	0.12	4.32	16.00	80	Trgy	0.02	0.68	6.25	20
Phlo	0.03	1.08	4.00	25	Alde	0.01	0.34	3.13	5
Trgy	0.02	0.72	2.67	20	Cora	0.01	0.34	3.13	5
					Unid.	0.02	0.68	6.25	15
Forb Total	0.75	26.99	100.00		Forb Total	0.32	10.91	100.00	
Grass and					Grass and				
Forb Total	2.78	100.00			Forb Total	2.93	100.00		



Appendix A

POWER RIM ALLOTMENT - PASTURE A

C1-1
Arthr-Agsm Type-Sprayed
NE exp., 2° slope
2 July 1970

C2-1
Arthr-Agsp Type-Sprayed
NE exp., 1° slope
3 July 1970

	Cover % Avg.	Comp. % all	Comp. % G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all	Comp. % G&F	Comp. % by Group	% Freq.
Arthr	0.85				10	Shrub Total	0.00				
Shrub Total	0.85					Agsp ^{1/}	1.39	47.78	50.36		90
Agsm	2.46	52.26	54.43		75	Orhy	0.16	5.50	5.80		15
Agsp	0.79	16.77	17.48		55	Pofe	0.06	2.06	2.17		10
Kocr	0.05	1.06	1.11		5	Pose	0.40	13.75	14.49		50
Orhy	0.24	5.10	5.31		40	Sihy	0.11	3.78	3.99		30
Pofe	0.35	7.43	7.74		35	Stco	0.64	21.99	23.19		50
Pose	0.19	4.03	4.20		55	Grass Total	2.76	94.86	100.00		
Sihy	0.18	3.82	3.98		25	Alte	0.01	0.34	6.67		5
Stco	0.26	5.52	5.75		55	Arabis spp.	0.01	0.34	6.67		5
Grass Total	4.52	95.99	100.00			Ermi	0.02	0.69	13.33		20
Arabis spp.	0.01	0.21	5.26		5	Erov	0.01	0.34	6.67		10
Eren	0.02	0.42	10.53		15	Phho	0.02	0.69	13.33		20
Ermi	0.02	0.42	10.53		15	Phlo	0.06	2.06	39.99		35
Phho	0.01	0.21	5.26		5	Sili	0.01	0.34	6.67		5
Phlo	0.06	1.27	31.59		55	Chat	0.01	0.34	6.67		5
Chat	0.01	0.21	5.26		5	Forb Total	0.15	5.14	100.00		
Chde	0.01	0.21	5.26		5	Grass and					
Cora	0.01	0.21	5.26		5	Forb Total	2.91	100.00			
Lare	0.04	0.85	21.05		35						
Forb Total	0.19	4.01	100.00								
Grass and											
Forb Total	4.71	100.00									

^{1/}Formerly, part of this Agropyron complex was classified as Agsm. collections made this year indicate that most, if not all, is Agsp so only this species is retained.



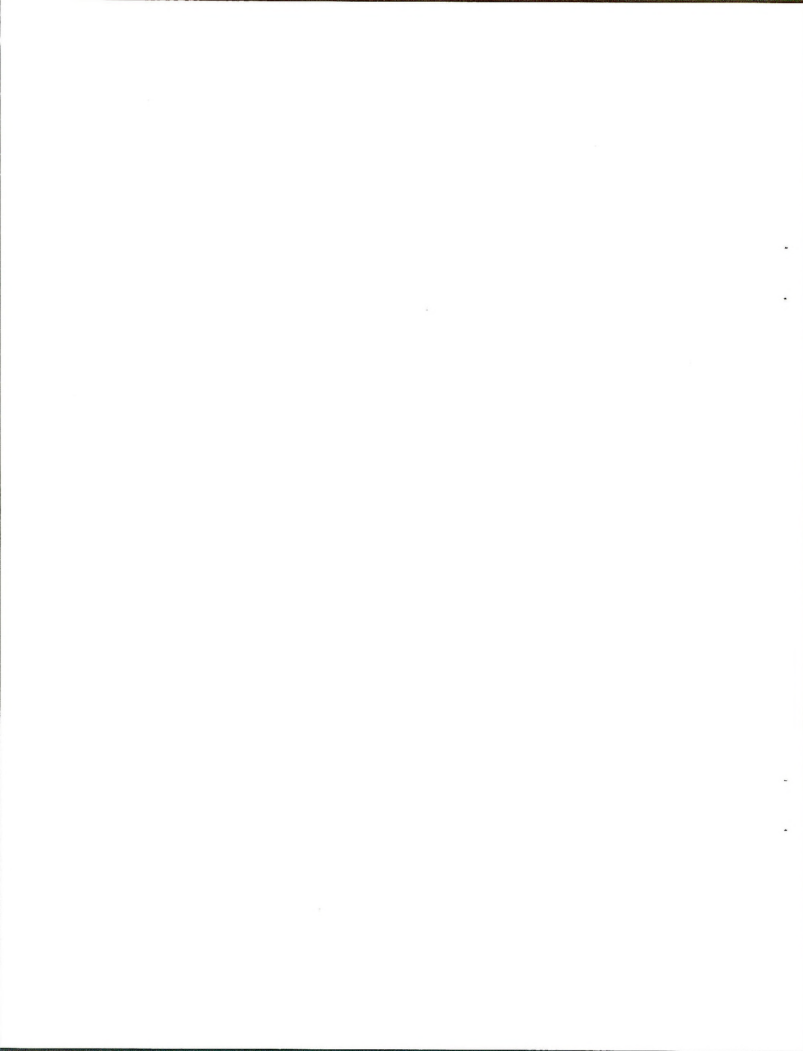
Appendix A

POWDER RIM ALLOTMENT - PASTURE A

C3-1
Artr-Agsm Type
NE exp., 0.5° slope
3 July 1970

C4-1
Artr-Agsm Type
W exp., 1° slope
3 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	11.35			55	Artr	8.55			35
Atco	0.10			5	Chvi	0.58			25
					Koam	0.04			20
Shrub Total	11.45				Shrub Total	9.17			
Agsm	0.67	51.92	72.82	75	Agsm	0.43	43.44	74.14	45
Orhy	0.01	0.78	1.09	5	Orhy	0.03	3.03	5.17	10
Pose	0.20	15.50	21.74	50	Pose	0.08	8.08	13.79	10
Sihiy	0.04	3.10	4.35	20	Sihiy	0.04	4.04	6.90	15
Grass Total	0.92	71.30	100.00		Grass Total	0.58	58.59	100.00	
Alte	0.01	0.78	2.70	10	Arho	0.15	15.15	36.59	5
Andi	0.04	3.10	10.81	15	Arpu	0.01	1.01	2.44	5
Arabis spp.	0.01	0.78	2.70	5	Eren	0.02	2.02	4.88	15
Eren	0.02	1.55	5.41	20	Erov	0.05	5.05	12.19	10
Erov	0.06	4.65	16.22	15	Haac	0.05	5.05	12.19	10
Oppo	0.10	7.75	27.03	5	Lofo	0.01	1.01	2.44	5
Pefr	0.01	0.78	2.70	5	Phho	0.11	11.11	26.83	65
Phho	0.10	7.75	27.03	80	Cora	0.01	1.01	2.44	5
Trgy	0.01	0.78	2.70	5					
Lare	0.01	0.78	2.70	5	Forb Total	0.41	41.41	100.00	
Forb Total	0.37	28.70	100.00		Grass and Forb Total	0.99	100.00		
Grass and Forb Total	1.29	100.00							



Appendix A

POWDER RIM ALLOTMENT - PASTURE A

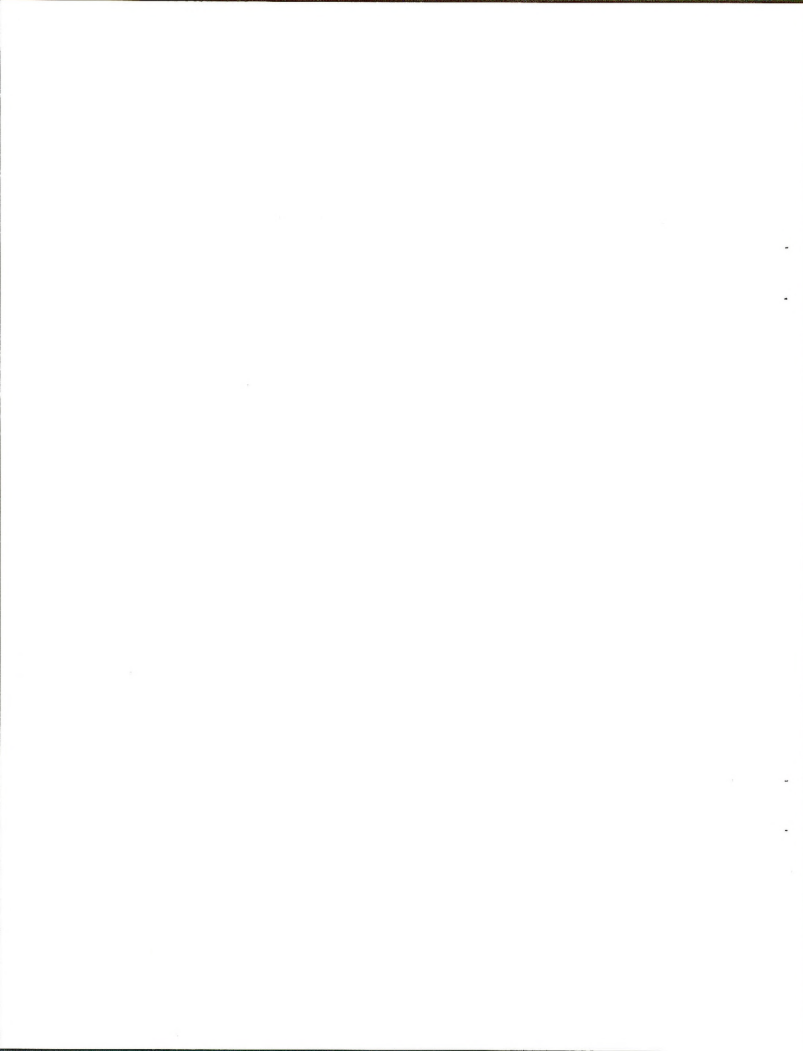
C4-2

Artr-Agsm Type
E exp., 2° slope
3 July 1970

C5-1

Artr-Agsm Type
N NW exp., 2° slope
3 July 1970

	Cover Avg.	% Comp. all G&F	% Comp. by Group	% Freq.		Cover Avg.	% Comp. all G&F	% Comp. by Group	% Freq.
Artr	11.81			55	Artr	14.70			65
Shrub Total	11.81				Shrub Total	14.70			
Agsm	0.77	49.03	57.46	85	Agsm	1.01	58.39	69.66	80
Orhy	0.13	8.28	9.70	15	Orhy	0.23	13.29	15.86	15
Pose	0.08	5.10	5.97	10	Pose	0.18	10.40	12.41	55
Stco	0.36	22.93	26.87	35	Stco	0.03	1.73	2.07	5
Grass Total	1.34	85.34	100.00		Grass Total	1.45	83.81	100.00	
Aspu	0.01	0.64	4.35	10	Alte	0.01	0.58	3.57	5
Ermi	0.04	2.55	17.39	20	Arabis spp.	0.01	0.58	3.57	5
Erov	0.01	0.64	4.35	5	Eren	0.02	1.16	7.14	15
Phho	0.12	7.64	52.17	50	Erov	0.03	1.73	10.71	5
Phlo	0.04	2.55	17.39	15	Haac	0.10	5.78	35.72	5
Sili	0.01	0.64	4.35	10	Phho	0.04	2.31	14.29	40
Forb Total	0.23	14.66	100.00		Phlo	0.06	3.47	21.43	55
Grass and Forb Total	1.57	100.00			Cora	0.01	0.58	3.57	5
					Forb Total	0.28	16.19	100.00	
					Grass and Forb Total	1.73	100.00		



POWDER RIM ALLOTMENT - PASTURE A

Appendix A

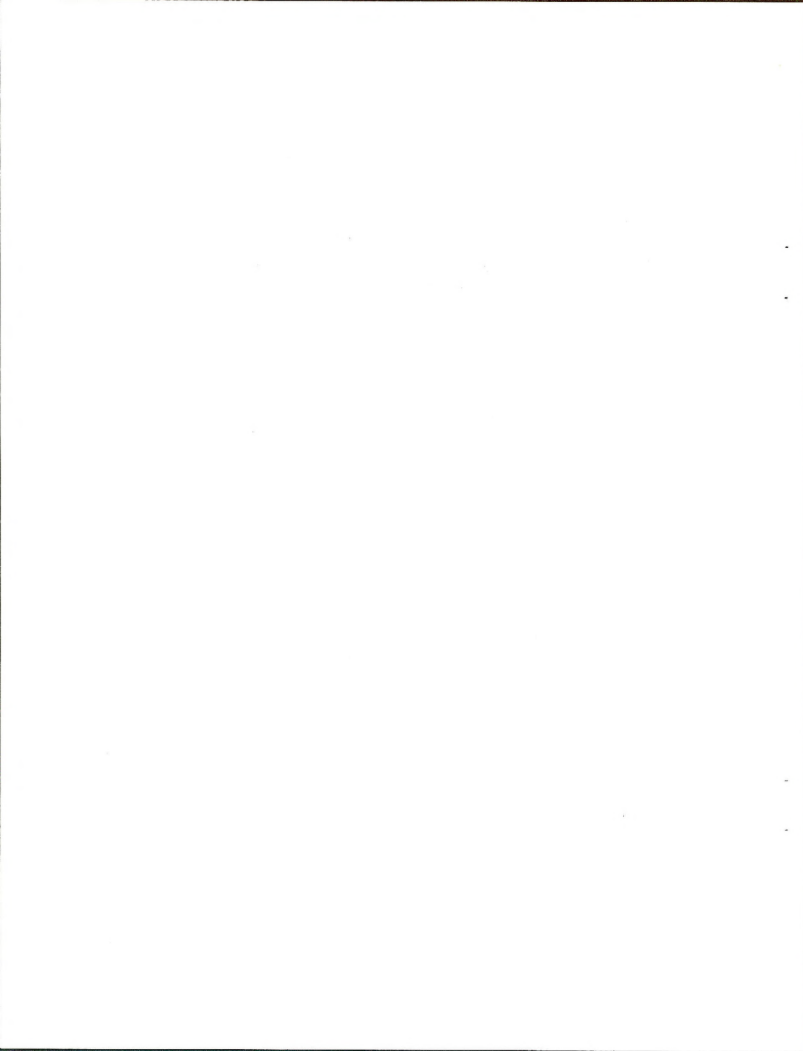
C6-1

Artr-Agsm Type
NE exp., 2° slope
3 July 1970

C7-1

Artr-Agsp Type
NE E exp., 3.5° slope
2 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	17.04			70	Artr	5.81			25
Shrub Total	17.04				Shrub Total	5.81			
Agsm	0.39	34.53	39.00	50	Agsp	1.88	66.19	87.44	80
Cael	0.03	2.65	3.00	5	Kocr	0.14	4.93	6.51	30
Orhy	0.11	9.73	11.00	10	Orhy	0.04	1.41	1.86	15
Pose	0.08	7.08	8.00	35	Pose	0.08	2.82	3.72	20
Sihy	0.03	2.65	3.00	5	Sihy	0.01	0.35	0.47	5
Stco	0.36	31.88	36.00	20					
Grass Total	1.00	88.52	100.00		Grass Total	2.15	75.70	100.00	
Alte	0.01	0.88	7.69	5	Arabis spp.	0.01	0.35	1.45	5
Asdi	0.02	1.77	15.38	15	Aspu	0.01	0.35	1.45	5
Eras	0.01	0.88	7.69	5	Ermi	0.06	2.11	8.70	15
Erov	0.05	4.42	38.47	5	Erpu	0.03	1.06	4.35	25
Phho	0.01	0.88	7.69	5	Haac	0.55	19.37	79.70	50
Phlo	0.03	2.65	23.08	25	Phho	0.03	1.06	4.35	30
Forb Total	0.13	11.48	100.00		Forb Total	0.69	24.30	100.00	
Grass and					Grass and				
Forb Total	1.13	100.00			Forb Total	2.84	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE A

C8-1
Juos Type
E exp., 12° slope
7 July 1970

C8-2
Juos Type
W exp., 8° slope
7 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	2.50			15	Arno	0.50			5
Juos	17.50			20	Juos	30.75			40
					Putr	0.01			5
Shrub Total	20.00				Shrub Total	31.26			
Agsp	0.13	18.31	22.81	15	Agsm	0.01	0.89	1.32	5
Kocr	0.03	4.22	5.26	10	Agsp	0.46	41.09	60.52	45
Orhy	0.09	12.68	15.79	20	Orhy	0.08	7.14	10.53	20
Pofe	0.21	29.58	36.84	35	Pofe	0.18	16.07	23.68	15
Pose	0.01	1.41	1.75	10	Pose	0.03	2.68	3.95	10
Stco	0.10	14.08	17.54	10					
Grass Total	0.57	80.28			Grass Total	0.76	67.87	100.00	
Asdi	0.01	1.41	7.14	10	Arfe	0.01	0.89	2.78	10
Crfc	0.04	5.63	28.57	20	Asdi	0.03	2.68	8.33	30
Erea	0.01	1.41	7.14	5	Basa	0.01	0.89	2.78	5
Erum	0.03	4.22	21.43	10	Crfc	0.07	6.25	19.44	25
Oeca	0.01	1.41	7.14	5	Haac	0.11	9.82	30.55	15
Pefr	0.01	1.41	7.14	10	Haam	0.10	8.93	27.78	5
Phas	0.01	1.41	7.14	5	Ermi	0.01	0.89	2.78	5
Phho	0.01	1.41	7.14	5	Phho	0.01	0.89	2.78	5
Chat	0.01	1.41	7.14	5	Phlo	0.01	0.89	2.78	5
Forb Total	0.14	19.72			Forb Total	0.36	32.13	100.00	
Grass and Forb Total	0.71	100.00			Grass and Forb Total	1.12	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE A

Exclosure

Artr-Agsm-Agsp Type-Sprayed
E NE exp., 40° slope

Inside Tr. 1
2 July 1970

Inside Tr. 2
2 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	0.31			15	Artr	1.45			20
Shrub Total	0.31				Shrub Total	1.45			
Agsm	1.83	38.28	41.40	95	Agsm	0.82	28.99	34.74	55
Agsp	0.39	8.16	8.82	30	Agsp	0.40	14.13	16.95	40
Cael	0.09	1.88	2.04	15	Cafi	0.15	5.30	6.36	10
Kocr	0.10	2.09	2.26	10	Kocr	0.16	5.65	6.78	20
Orhy	0.03	0.63	0.67	5	Orhy	0.03	1.06	1.27	5
Pofe	1.33	27.82	30.09	50	Pofe	0.53	18.73	22.46	45
Pose	0.09	1.88	2.04	45	Pose	0.08	2.83	3.39	35
Sihy	0.25	5.23	5.65	25	Stco	0.19	6.71	8.05	30
Stco	0.31	6.49	7.01	35					
Grass Total	4.42	92.46			Grass Total	2.36	83.40	100.00	
Alte	0.02	0.42	5.56	15	Alte	0.02	0.71	4.26	20
Aspu	0.01	0.21	2.78	5	Asdi	0.01	0.35	2.13	5
Crfc	0.01	0.21	2.78	5	Eren	0.02	0.71	4.26	15
Eren	0.01	0.21	2.78	10	Ermi	0.18	6.36	38.29	50
Ermi	0.22	4.60	61.11	50	Erov	0.01	0.35	2.13	5
Phho	0.01	0.21	2.78	5	Haac	0.13	4.59	27.65	20
Phlo	0.06	1.26	16.67	55	Phho	0.02	0.71	4.26	15
Sein	0.01	0.21	2.78	5	Phlo	0.07	2.47	14.89	65
Sili	0.01	0.21	2.78	5	Sein	0.01	0.35	2.13	5
Forb Total	0.36	7.54			Forb Total	0.47	16.60	100.00	
Grass and Forb Total	4.78	100.00			Grass and Forb Total	2.83	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE A

Exclosure

Artr-Agsm-Agsp Type-Sprayed
E NE exp., 4° slope

Outside Tr. 1
2 July 1970

Outside Tr. 2
2 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	0.10			5	Artr	1.15			15
Shrub Total	0.10				Shrub Total	1.15			
Agsm	1.90	43.79	44.92	80	Agsm	1.59	47.17	53.71	90
Agsp	0.72	16.59	17.02	45	Agsp	0.20	5.93	6.76	15
Cafi	0.83	19.12	19.62	15	Cael	0.11	3.26	3.72	15
Kocr	0.03	0.69	0.71	5	Kocr	0.18	5.34	6.08	25
Orhy	0.15	3.46	3.55	15	Orhy	0.05	1.48	1.69	5
Pofe	0.05	1.15	1.18	5	Pofe	0.47	13.95	15.88	55
Pose	0.09	2.07	2.13	25	Pose	0.08	2.37	2.70	40
Stco	0.46	10.60	10.87	30	Sihi	0.13	3.86	4.39	20
					Stco	0.15	4.45	5.07	35
Grass Total	4.23	97.47	100.00		Grass Total	2.96	87.81	100.00	
Arfe	0.01	0.23	9.09	5	Alte	0.01	0.30	2.44	5
Asdi	0.01	0.23	9.09	10	Andi	0.05	1.48	12.20	5
Aspu	0.01	0.23	9.09	10	Arabis spp.	0.01	0.30	2.44	5
Ermi	0.02	0.46	18.18	15	Asdi	0.01	0.30	2.44	5
Lofo	0.01	0.23	9.09	5	Aspu	0.01	0.30	2.44	5
Phho	0.01	0.23	9.09	5	Crfc	0.01	0.30	2.44	10
Phlo	0.04	0.92	36.37	40	Erea	0.01	0.30	2.44	10
Forb Total	0.11	2.53	100.00		Ermi	0.15	4.45	36.58	70
Grass and					Haac	0.03	0.89	7.32	5
Forb Total	4.34	100.00			Phlo	0.10	2.97	24.38	75
					Seln	0.01	0.30	2.44	5
					Chat	0.01	0.30	2.44	10
					Forb Total	0.41	12.19	100.00	
					Grass and				
					Forb Total	3.37	100.00		



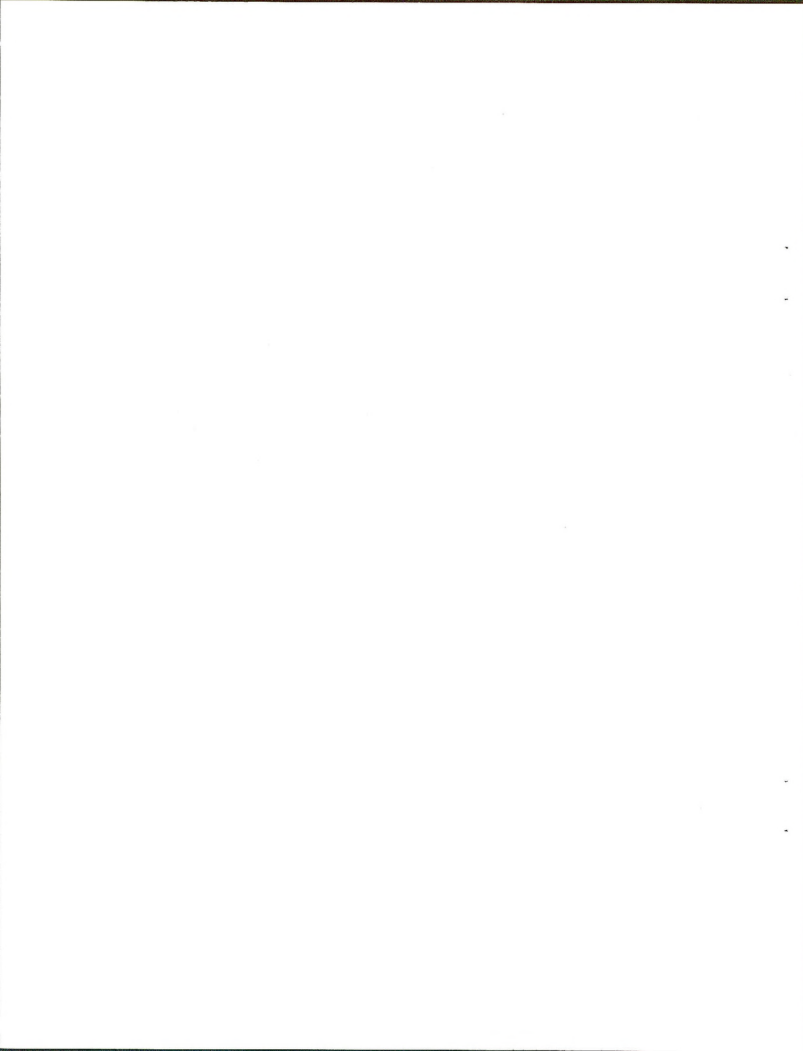
Appendix A

POWDER RIM ALLOTMENT - PASTURE B

C1-1
Atga Type
0 slope
4 July 1970

C2-1
Artr-Agsm Type
S exp., 1.5° slope
4 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Atga	13.91			90	Artr	10.11			65
					Eula	0.01			5
Shrub Total	13.91				Shrub Total	10.12			
Orhy	0.13	92.86	92.86	15	Agsm	1.59	60.69	66.24	80
Sihy	0.01	7.14	7.14	5	Orhy	0.01	0.38	0.42	5
Grass Total	0.14	100.00	100.00		Pose	0.10	3.82	4.17	35
Forb Total	0.00	0.00			Stco	0.70	26.72	29.17	35
Grass and Forb Total	0.14	100.00			Grass Total	2.40	91.61	100.00	
					Aspu	0.01	0.38	4.55	5
					Eren	0.01	0.38	4.55	10
					Erov	0.09	3.44	40.90	20
					Pefr	0.01	0.38	4.55	5
					Phho	0.06	2.29	27.26	35
					Phlo	0.02	0.76	9.09	15
					Spco	0.01	0.38	4.55	10
					Trgy	0.01	0.38	4.55	5
					Forb Total	0.22	8.39	100.00	
					Grass Total	2.62	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

C3-1

Chgr-Orhy Type
NE exp., 1.75° slope
4 July 1970

C4-1

Artr-Cafi Type
S SW exp., 4° slope
4 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Atga	0.25			5	Artr	4.93			20
Chvi	1.96			85					
Koam	0.09			20	Shrub Total	4.93			
Magl	1.00			55					
Shrub Total	3.30				Agsm	0.19	3.84	3.93	40
					Cael	0.11	2.22	2.27	25
Orhy	0.32	46.38	49.23	40	Cafi	3.25	65.67	67.15	60
Pose	0.24	34.78	36.92	25	Hija	0.25	5.05	5.17	15
Sihiy	0.09	13.04	13.85	20	Orhy	0.03	0.61	0.62	5
					Pose	0.03	0.61	0.62	10
Grass Total	0.65	94.20	100.00		Stco	0.96	19.39	19.83	80
					Feoc	0.02	0.40	0.41	20
Alte	0.01	1.45	25.00	10	Grass Total	4.84	97.79	100.00	
Lofo	0.01	1.45	25.00	5					
Phho	0.01	1.45	25.00	5	Aspu	0.01	0.20	9.09	5
Trgy	0.01	1.45	25.00	5	Phho	0.01	0.20	9.09	10
Forb Total	0.04	5.80	100.00		Spco	0.05	1.01	45.46	25
					Toin	0.01	0.20	9.09	5
Grass and					Lare	0.01	0.20	9.09	10
Forb Total	0.69	100.00			Oeco	0.02	0.40	18.18	15
					Forb Total	0.11	2.21	100.00	
					Grass and				
					Forb Total	4.95	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

C5-1
Artr-Agsp Type
N exp., 30° slope
2 July 1970

C6-1
Artr-Agsm Type
N NW exp., 0.5° slope
4 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	0.76			10	Artr	13.25			65
Atco	0.20			15	Chv1	0.01			5
Chv1	0.16			15					
Eula	0.65			10	Shrub Total	13.26			
Shrub Total	1.77				Agsm	0.77	59.68	63.11	100
Agsm	1.63	34.53	36.22	30	Cael	0.03	2.33	2.46	5
Agsp	2.53	53.61	56.23	60	Orhy	0.28	21.70	22.95	25
Kocr	0.08	1.69	1.78	20	Pose	0.14	10.85	11.48	25
Orhy	0.06	1.27	1.33	20	Grass Total	1.22	94.56	100.00	
Pose	0.20	4.24	4.44	70	Erov	0.01	0.78	14.29	5
Grass Total	4.50	95.34	100.00		Phho	0.03	2.33	42.85	30
Arabis spp.	0.01	0.21	4.55	5	Spco	0.02	1.55	28.57	15
Assp	0.11	2.33	50.00	45	Unid.	0.01	0.78	14.29	5
Ermi	0.02	0.42	9.09	15	Forb Total	0.07	5.44		
Erpu	0.03	0.64	13.63	30	Grass and				
Phho	0.04	0.85	18.18	35	Forb Total	1.29	100.00	100.00	
Lare	0.01	0.21	4.55	5					
Forb Total	0.22	4.66	100.00						
Grass and									
Forb Total	4.72	100.00							



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

C7-1
Arpe Type
W exp., 0.5° slope
4 July 1970

C8-1
Artr-Agsm Type
S exp., 3° slope
3 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arpe	5.95			90	Artr	8.45			55
Atga	0.10			5					
Chvi	2.43			70	Shrub Total	8.45			
Shrub Total	8.48				Agsm	2.54	86.10	92.71	100
Agsm	0.14	14.89	17.28	15	Orhy	0.13	4.41	4.74	15
Orhy	0.20	21.28	24.69	40	Pose	0.06	2.03	2.19	15
Pose	0.32	34.04	39.51	60	Sihy	0.01	0.34	0.36	5
Sihy	0.15	15.96	18.52	45	Grass Total	2.74	92.88	100.00	
Grass Total	0.81	86.17	100.00		Alte	0.01	0.34	4.76	5
Eren	0.02	2.13	15.38	15	Crfc	0.01	0.34	4.76	5
Pefr	0.01	1.06	7.69	10	Phho	0.05	1.69	23.81	25
Phho	0.10	10.64	76.93	95	Phlo	0.13	4.41	61.91	90
Forb Total	0.13	73.83			Cora	0.01	0.34	4.76	5
Grass and Forb Total	0.94	100.00	100.00		Forb Total	0.21	7.12	100.00	
					Grass and Forb Total	2.95	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

C9-1

Artr-Agsm Type
NE exp., 2° slope
24 June 1970

C10-1

Artr-Agsm Type
SW exp., 0.25° slope
2 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	8.56			70	Artr	10.91			50
Atco	0.80			10					
Koam	0.01			5	Shrub Total	10.91			
Shrub Total	9.37				Agsm	0.92	46.23	80.70	85
Agsm	0.59	60.83	69.42	70	Kocr	0.03	1.51	2.63	5
Orhy	0.10	10.31	11.76	10	Orhy	0.01	0.50	0.88	5
Pose	0.09	9.28	10.59	45	Pose	0.05	2.51	4.39	30
Sihy	0.02	2.06	2.35	15	Sihy	0.03	1.51	2.63	10
Stco	0.05	5.15	5.88	10	Stco	0.10	5.03	8.77	5
Grass Total	0.85	87.63	100.00		Grass Total	1.14	57.29	100.00	
Andi	0.01	1.03	8.33	5	Alte	0.02	1.01	2.35	20
Crepis spp.	0.01	1.03	8.33	10	Arabis spp.	0.01	0.50	1.18	5
Phho	0.08	8.25	66.68	15	Aspu	0.01	0.50	1.18	10
Spcu	0.01	1.03	8.33	5	Erov	0.21	10.55	24.70	45
Unid.	0.01	1.03	8.33	5	Erpu	0.06	3.02	7.06	60
Forb Total	0.12	12.37	100.00		Haac	0.41	20.60	48.23	60
Grass and					Pefr	0.01	0.50	1.18	10
Forb Total	0.97	100.00			Phho	0.12	6.03	14.12	70
					Forb Total	0.85	42.71	100.00	
					Grass and				
					Forb Total	1.99	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

Exclosure I

Atga & Artr Types
0 slope

Outside Tr. 1
5 July 1970

Inside Tr. 1
4 July 1970

	Cover %	Comp. %	Comp. %	%		Cover %	Comp. %	Comp. %	%
	Avg.	all G&F	by Group	Freq.		Avg.	all G&F	by Group	Freq.
Arsp	5.56			65	Arsp	0.80			10
Artr	3.26			10	Atga	12.53			70
Atga	1.83			50					
Chvi	0.20			5	Shrub Total	13.33			
Shrub Total	10.85				Agsm	0.78	72.92	75.74	30
					Orhy	0.05	4.67	4.85	5
Agsm	0.90	69.23	69.76	35	Pose	0.05	4.67	4.85	10
Orhy	0.11	8.46	8.53	10	Sihiy	0.15	14.02	14.56	15
Pose	0.13	10.00	10.08	10					
Sihiy	0.15	11.54	11.63	10	Grass Total	1.03	96.28	100.00	
Grass Total	1.29	99.23	100.00		Phho	0.01	0.93	25.00	5
					Siel	0.01	0.93	25.00	10
Phho	0.01	0.77	100.00	10	Saka	0.01	0.93	25.00	10
					Unid.	0.01	0.93	25.00	5
Forb Total	0.01	0.77	100.00		Forb Total	0.04	3.72	100.00	
Grass and					Grass and				
Forb Total	1.30	100.00			Forb Total	1.07	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

Exclosure I

Atga & Artr Types
0 slope

Outside Tr. 2
5 July 1970

Inside Tr. 2
5 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arsp	0.01			5	Artr	15.10			50
Artr	11.61			50	Atga	1.60			20
Atga	0.16			10					
Shrub Total	11.78				Shrub Total	16.70			
Agsm	0.95	53.67	55.88	60	Agsm	0.71	71.00	73.20	75
Orhy	0.18	10.17	10.59	20	Orhy	0.05	5.00	5.15	5
Pose	0.36	20.38	21.18	35	Pose	0.01	1.00	1.03	5
Sihy	0.21	11.86	12.35	20	Sihy	0.20	20.00	20.62	30
Grass Total	1.70	96.08	100.00		Grass Total	0.97	97.00	100.00	
Hagl	0.01	0.56	14.29	5	Phho	0.01	1.00	33.33	10
Phho	0.01	0.56	14.29	5	Chat	0.01	1.00	33.33	5
Chat	0.01	0.56	14.29	5	Lare	0.01	1.00	33.34	10
Cora	0.01	0.56	14.29	5	Forb Total	0.03	3.00	100.00	
Lare	0.01	0.56	14.28	5					
Saka	0.01	0.56	14.28	5	Grass and				
Siel	0.01	0.56	14.28	5	Forb Total	1.00	100.00		
Forb Total	0.07	3.92	100.00						
Grass and									
Forb Total	1.77	100.00							



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

Exclosure II

Game and Livestock Exclusion

Juos Type

S exp., 4⁰ slope

Inside Tr. 1
8 July 1970

Inside Tr. 2
8 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Juos	6.05			15	Arno	0.06			10
Shrub Total	6.05				Juos	33.16			50
					Shrub Total	33.22			
Agsp	0.01	0.28	14.29	10	Agsp	0.11	5.70	84.62	10
Cafi	0.06	1.69	85.71	10	Pose	0.01	0.52	7.69	5
Grass Total	0.07	1.97	100.00		Sihiy	0.01	0.52	7.69	5
Arfe	0.04	1.13	1.15	20	Grass Total	0.13	6.74	100.00	
Asdi	0.01	0.28	0.29	10	Arfe	0.06	3.11	3.33	35
Crfc	0.01	0.28	0.29	5	Arabis spp.	0.01	0.52	0.56	5
Eren	0.03	0.85	0.86	30	Crfc	0.01	0.52	0.56	5
Haac	3.11	87.61	89.36	65	Eren	0.03	1.55	1.67	25
Oppo	0.25	7.04	7.18	5	Haac	1.64	84.97	91.09	60
Pefr	0.01	0.28	0.29	10	Pefr	0.01	0.52	0.56	5
Phau	0.01	0.28	0.29	5	Phau	0.01	0.52	0.56	5
Phho	0.01	0.28	0.29	5	Phho	0.03	1.55	1.67	10
Forb Total	3.48	98.03	100.00		Forb Total	1.80	93.26	100.00	
Grass and					Grass and				
Forb Total	3.55	100.00			Forb Total	1.93	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE B

Exclosure II

Game and Livestock Exclusion

Juos Type

S exp., 40 slope

Out Tr. 1
8 July 1970

Out Tr. 2
8 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Arno	0.55			10	Arno	0.41			15
Juos	28.00			50	Juos	21.50			35
Shrub Total	28.55				Shrub Total	21.91			
Agsp	0.18	19.35	85.71	20	Agsp	0.13	4.85	59.09	15
Stco	0.03	3.23	14.29	5	Pose	0.04	1.49	18.18	15
					Stco	0.05	1.87	22.73	5
Grass Total	0.21	22.58	100.00		Grass Total	0.22	8.21	100.00	
Arfe	0.01	1.08	1.39	5	Arfe	0.07	2.61	2.85	25
Asdi	0.01	1.08	1.39	10	Asdi	0.01	0.37	0.41	5
Eren	0.01	1.08	1.39	10	Aspu	0.01	0.37	0.41	5
Ermi	0.01	1.08	1.39	5	Crfe	0.01	0.37	0.41	10
Haac	0.66	70.95	91.66	20	Eren	0.03	1.12	1.22	30
Phho	0.02	2.15	2.78	15	Haac	2.31	86.21	93.88	55
Forb Total	0.72	77.42	100.00		Phho	0.01	0.37	0.41	5
Grass and					Chat	0.01	0.37	0.41	5
Forb Total	0.93	100.00			Forb Total	2.46	91.79	100.00	
					Grass and				
					Forb Total	2.68	100.00		



Appendix: A

POWDER RIM ALLOTMENT - PASTURE C

C1-1
Artr-Agsm Type
E NE exp., 1.5° slope
24 June 1970

C2-1
Artr-Agsm Type
S SW exp., 2° slope
7 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	7.76			55	Artr	11.88			80
Chvi	0.10			5	Atco	0.06			10
Eula	0.01			5	Atga	1.30			20
Koam	0.01			5	Chvi	0.25			5
					Grsp	0.05			5
Shrub Total	7.88				Shrub Total	13.54			
Agsm	0.32	33.33	43.25	65	Orhy	0.18	43.90	72.00	15
Orhy	0.18	18.76	24.32	50	Sihi	0.06	14.63	24.00	15
Pose	0.13	13.54	17.57	45	Brte	0.01	2.44	4.00	10
Sihi	0.11	11.46	14.86	20					
Grass Total	0.74	77.09	100.00		Grass Total	0.25	60.97	100.00	
Alte	0.01	1.04	4.55	5	Arabis spp.	0.01	2.44	6.25	5
Andi	0.02	2.08	9.09	15	Eren	0.02	4.88	12.50	15
Arabis spp.	0.01	1.04	4.55	5	Erov	0.10	24.39	62.50	5
Crepis spp.	0.01	1.04	4.55	10	Phho	0.01	2.44	6.25	5
Eren	0.03	3.13	13.62	25	Erce	0.01	2.44	6.25	5
Lofo	0.01	1.04	4.55	10	Lepu	0.01	2.44	6.25	5
Pefr	0.01	1.04	4.55	5	Forb Total	0.16	39.03	100.00	
Phho	0.05	5.21	22.71	45	Grass and				
Phlo	0.02	2.08	9.09	20	Forb Total	0.41	100.00		
Trgy	0.03	3.13	13.64	25					
Lare	0.01	1.04	4.55	5					
Unid.	0.01	1.04	4.55	5					
Grass Total	0.22	22.91	100.00						
Grass and									
Forb Total	0.96	100.00							



Appendix A

POWDER RIM ALLOTMENT - PASTURE C

C2-2
Artr-Agsm Type
S SW exp., 2.5° slope

C3-1
Artr-Cael Type
S SW exp., 1° slope

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	9.20			85	Artr	6.81			65
Atco	0.13			10					
Atga	0.50			5	Shrub Total	6.81			
Chvi	0.30			10					
Shrub Total	10.13				Cael	0.72	48.64	52.55	50
					Orhy	0.06	4.05	4.38	10
Agsm	1.21	66.87	79.60	55	Pose	0.26	17.57	18.98	60
Orhy	0.16	8.84	10.53	20	Sihy	0.09	6.08	6.57	25
Sihy	0.08	4.42	5.26	40	Stco	0.23	15.54	16.79	45
Stco	0.06	3.31	3.95	10	Brte	0.01	0.68	0.73	5
Feoc	0.01	0.55	0.66	10	Grass Total	1.37	92.56	100.00	
Grass Total	1.52	83.99	100.00		Alte	0.01	0.68	9.09	5
					Eren	0.03	2.03	27.27	30
Eren	0.02	1.10	6.90	20	Phho	0.06	4.05	54.55	15
Erov	0.05	2.76	17.24	5	Spco	0.01	0.68	9.09	5
Oppo	0.20	11.05	68.96	10	Forb Total	0.11	7.44	100.00	
Phho	0.01	0.55	3.45	5					
Oeco	0.01	0.55	3.45	5	Grass and				
Forb Total	0.29	16.01	100.00		Forb Total	1.48	100.00		
Grass and									
Forb Total	1.81	100.00							



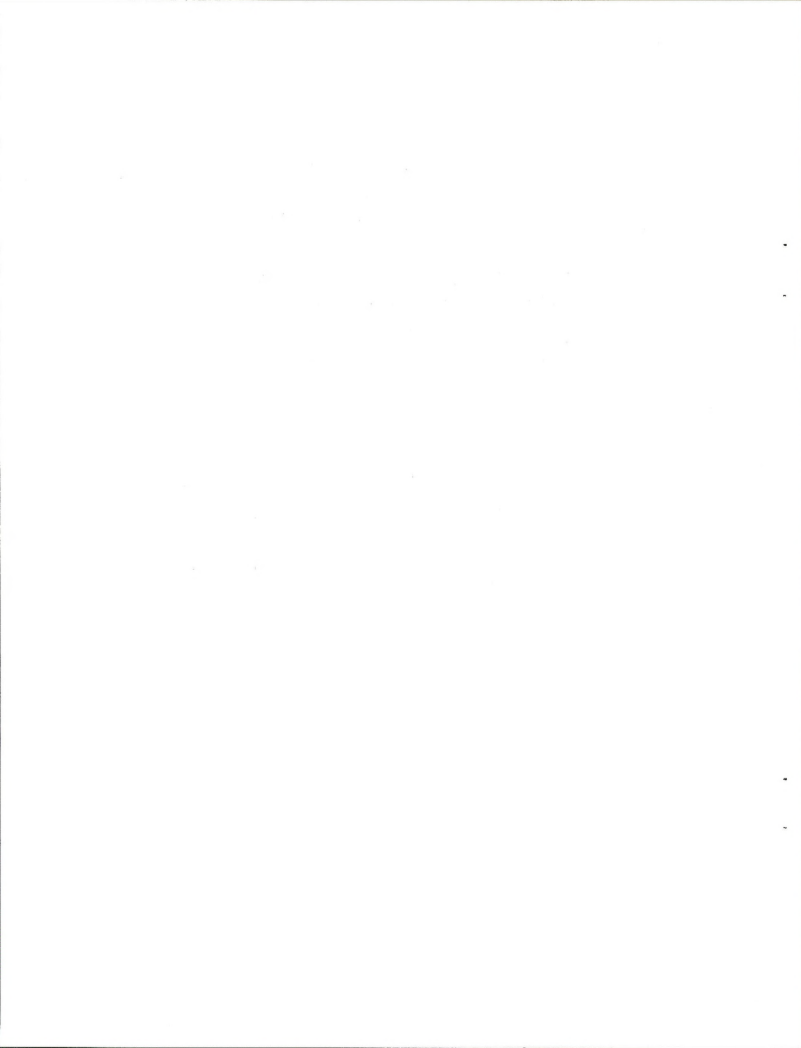
Appendix A

POWDER RIM ALLOTMENT - PASTURE C

C4-1
Artr-Stco Type
S exp., 1° slope
7 July 1970

C5-1
Artr-Stco Type
S exp., 1.5° slope
6 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	11.55			45	Artr	14.90			75
Atco	0.10			5					
Atga	0.10			5	Shrub Total	14.90			
Chvi	0.91			25					
Shrub Total	12.66				Agsm	0.18	12.86	16.07	30
					Orhy	0.01	0.71	0.89	5
Agsm	0.11	6.79	6.88	25	Sihy	0.09	6.43	8.04	25
Orhy	0.10	6.17	6.25	10	Stco	0.82	58.59	73.21	70
Pose	0.01	0.62	0.63	10	Feoc	0.02	1.43	1.79	15
Sihy	0.21	12.96	13.12	30	Grass Total	1.12	80.02	100.00	
Stco	1.16	71.61	72.49	85					
Feoc	0.01	0.62	0.63	10	Andi	0.03	2.14	10.71	5
Grass Total	1.60	98.77	100.00		Eren	0.01	0.71	3.57	10
					Erov	0.06	4.29	21.44	15
Alde	0.02	1.23	100.00	15	Oppo	0.05	3.57	17.86	5
Forb Total	0.02	1.23	100.00		Phho	0.07	5.00	25.00	25
					Spco	0.01	0.71	3.57	10
Grass and					Trgy	0.03	2.14	10.71	5
Forb Total	1.62	100.00			Alde	0.01	0.71	3.57	5
					Lare	0.01	0.71	3.57	5
					Forb Total	0.28	19.98	100.00	
					Grass and				
					Forb Total	1.40	100.00		



POWDER RIM ALLOTMENT - PASTURE C

Appendix A

C6-1

Artr-Agsm Type

SW exp., 4° slope

5 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Frequency
Artr	7.25			50
Atco	1.55			15
Chvi	0.65			25
Tenu	0.05			5
Shrub Total	9.50			
Agsm	0.88	65.19	67.69	75
Hija	0.03	2.22	2.31	5
Orhy	0.22	16.30	16.92	35
Pose	0.01	0.74	0.77	5
Sihiy	0.01	0.74	0.77	5
Stco	0.14	10.37	10.77	30
Brte	0.01	0.74	0.77	5
Grass Total	1.30	96.30	100.00	
Eren	0.01	0.74	20.00	10
Ermi	0.01	0.74	20.00	5
Phho	0.01	0.74	20.00	5
Asge	0.01	0.74	20.00	10
Gile	0.01	0.74	20.00	5
Forb Total	0.05	3.70	100.00	
Grass and Forb Total	1.35	100.00		



POWDER RIM ALLOTMENT - PASTURE C

Appendix A

Exclosure

Artr-Agsm Type-No Spray
0 slope

Outside
5 July 1970

Inside
5 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	5.33			60	Artr	7.18			55
Atco	0.06			10	Arsp	0.41			15
Chvi	0.75			5	Atco	1.55			15
					Chvi	0.75			5
Shrub Total	6.14				Shrub Total	9.89			
Agsm	0.03	7.50	20.00	5	Agsm	0.11	11.34	16.18	20
Pose	0.04	10.00	26.67	20	Orhy	0.01	1.03	1.47	10
Sihi	0.08	20.00	53.33	20	Pose	0.10	10.31	14.71	15
Grass Total	0.15	37.50	100.00		Sihi	0.25	25.78	36.76	50
					Stco	0.21	21.65	30.88	15
Arabis spp.	0.01	2.50	4.00	5	Grass Total	0.68	70.10	100.00	
Eren	0.03	7.50	12.00	25	Arabis spp.	0.01	1.03	3.45	5
Phho	0.14	35.00	56.00	75	Aspu	0.01	1.03	3.45	5
Sili	0.01	2.50	4.00	10	Eren	0.02	2.06	6.90	20
Spco	0.02	5.00	8.00	20	Lofo	0.01	1.03	3.45	5
Alde	0.02	5.00	8.00	15	Oppo	0.10	10.31	34.48	5
Saka	0.02	5.00	8.00	20	Phho	0.12	12.37	41.37	55
Forb Total	0.25	62.50	100.00		Alde	0.02	2.06	6.90	15
Grass and					Forb Total	0.29	29.90	100.00	
Forb Total	0.40	100.00			Grass and				
					Forb Total	0.97	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE C

Exclosure

Artr-Agsm Type-Sprayed
0 slope

Outside
5 July 1970

Inside
5 July 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	4.05			40	Artr	0.96			25
Atco	3.35			10	Chvi	1.65			10
Shrub Total	7.40				Shrub Total	2.61			
Agsm	0.03	2.46	4.00	5	Agsm	0.06	6.98	8.57	20
Pose	0.11	9.02	14.67	20	Pose	0.01	1.16	1.43	5
Sihi	0.29	23.76	38.67	35	Sihi	0.14	16.28	20.00	25
Stco	0.32	26.23	42.66	40	Stco	0.48	55.83	68.57	80
					Feoc	0.01	1.16	1.43	5
Grass Total	0.75	61.47	100.00		Grass Total	0.70	81.41	100.00	
Eren	0.02	1.64	4.26	20	Eren	0.01	1.16	6.25	5
Erov	0.05	4.10	10.64	5	Phho	0.04	4.65	25.00	40
Maca	0.01	0.82	2.13	5	Alde	0.08	9.30	50.00	75
Oppo	0.18	14.75	38.30	10	Erce	0.01	1.16	6.25	10
Phho	0.03	2.46	6.38	30	Lare	0.01	1.16	6.25	5
Alde	0.13	10.66	27.65	85	Oeco	0.01	1.16	6.25	5
Chde	0.01	0.82	2.13	5					
Saka	0.04	3.28	8.51	40					
Forb Total	0.47	38.53	100.00		Forb Total	0.16	18.59	100.00	
Grass and Forb Total	1.22	100.00			Grass and Forb Total	0.86	100.00		



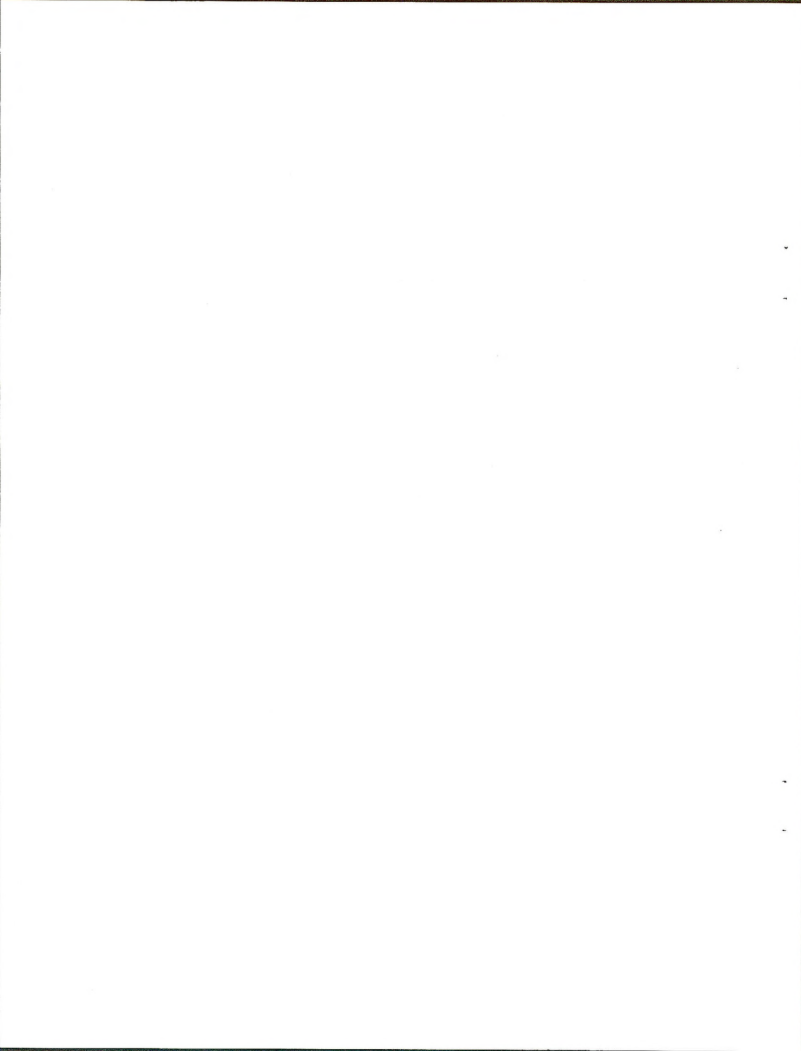
Appendix A

POWDER RIM ALLOTMENT - PASTURE D

C1-1
Artr-Eula-Agsm Type
E exp., 3° slope
23 June 1970

C2-1
Artr-Agsm Type
S exp., 4° slope
23 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	1.41			20	Artr	3.70			35
Atga	0.25			5	Atco	0.15			5
Chvi	0.08			15					
Eula	1.41			45	Shrub Total	3.85			
Shrub Total	3.15				Agsm	0.67	32.50	37.85	85
Agsm	0.89	44.02	47.35	95	Orhy	0.03	1.46	1.69	10
Orhy	0.75	37.13	39.89	85	Pose	0.02	0.97	1.13	40
Pose	0.23	11.39	12.23	50	Stco	1.02	49.50	57.64	95
Sihiy	0.01	0.50	0.53	10	Feoc	0.03	1.46	1.69	25
Grass Total	1.88	93.04	100.00		Grass Total	1.77	85.89	100.00	
Alte	0.01	0.50	7.14	5	Alte	0.01	0.49	3.45	10
Eren	0.01	0.50	7.14	5	Andi	0.01	0.49	3.45	5
Oppo	0.01	0.50	7.14	5	Eren	0.07	3.40	24.14	65
Phho	0.06	2.97	42.87	55	Maca	0.01	0.49	3.45	5
Alde	0.01	0.50	7.14	5	Oppo	0.08	3.88	27.58	5
Chde	0.01	0.50	7.14	5	Phho	0.02	0.97	6.90	20
Gipu	0.01	0.50	7.14	10	Phlo	0.03	1.46	10.34	30
Lare	0.02	0.99	14.29	15	Spco	0.03	1.46	10.34	30
Forb Total	0.14	6.96	100.00		Trgy	0.01	0.49	3.45	5
Grass and Forb Total	2.02	100.00			Alde	0.01	0.49	3.45	5
					Pipa	0.01	0.49	3.45	5
					Forb Total	0.29	14.11	100.00	
					Grass and Forb Total	2.06	100.00		



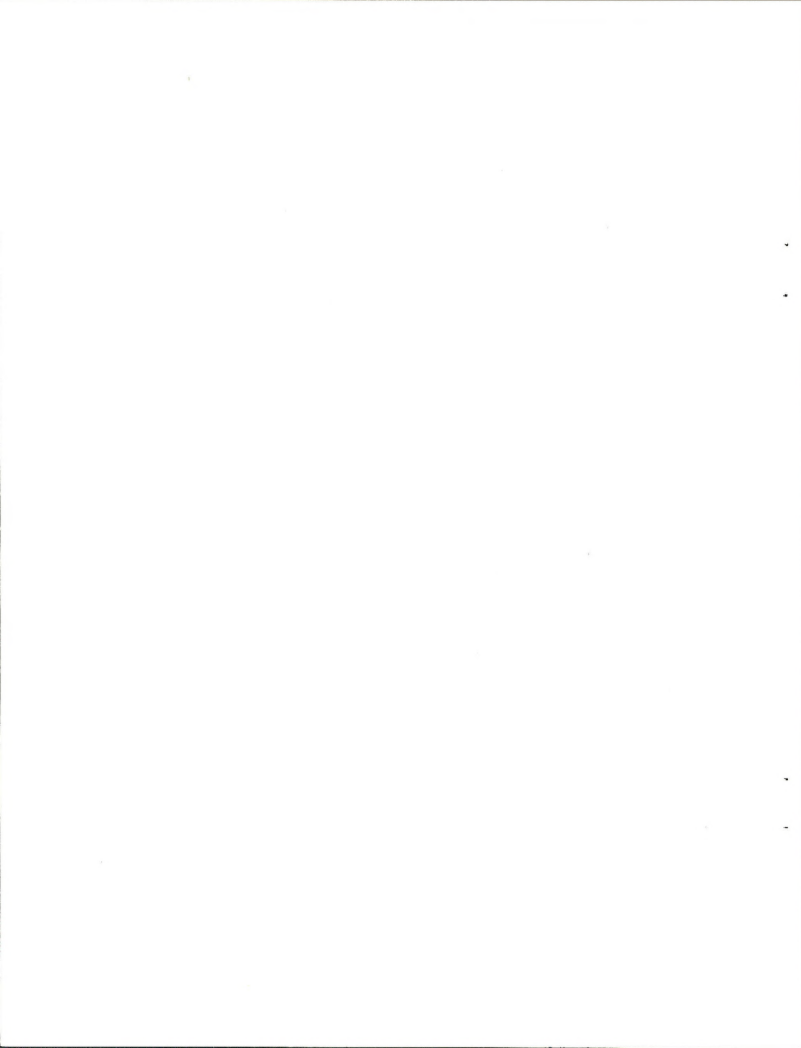
POWDER RIM ALLOTMENT - PASTURE D

Appendix A

C3-1
Artr-Agsm Type
E NE exp., 1.5° slope
23 June 1970

C4-1
Save-Arsp Type
E exp., 0.25° slope
24 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	15.51			65	Arsr	0.66			55
Chvl	0.10			5	Atga	0.81			20
					Koam	0.59			65
Shrub Total	15.61				Save	0.16			15
Agsm	1.35	84.34	93.76	80	Shrub Total	2.22			
Pose	0.07	4.38	4.86	50					
Sihi	0.01	0.63	0.69	5	Agsm	0.08	8.25	66.67	5
Stco	0.01	0.63	0.69	5	Pose	0.03	3.09	25.00	10
					Feoc	0.01	1.03	8.33	5
Grass Total	1.44	89.98	100.00		Grass Total	0.12	12.37	100.00	
Alte	0.04	2.50	25.00	40					
Cybu	0.01	0.63	6.25	5	Alte	0.01	1.03	1.18	10
Eren	0.02	1.25	12.50	15	Oppo	0.70	72.17	82.34	20
Erov	0.03	1.88	18.75	5	Alde	0.01	1.03	1.18	10
Phho	0.01	0.63	6.25	5	Atwo	0.10	10.31	11.76	55
Phlo	0.04	2.50	25.00	35	Gipu	0.01	1.03	1.18	5
Trgy	0.01	0.63	6.25	5	Lare	0.01	1.03	1.18	5
					Mopu	0.01	1.03	1.18	5
Forb Total	0.16	10.02	100.00		Forb Total	0.85	87.63	100.00	
Grass and									
Forb Total	1.60	100.00			Grass and				
					Forb Total	0.97	100.00		



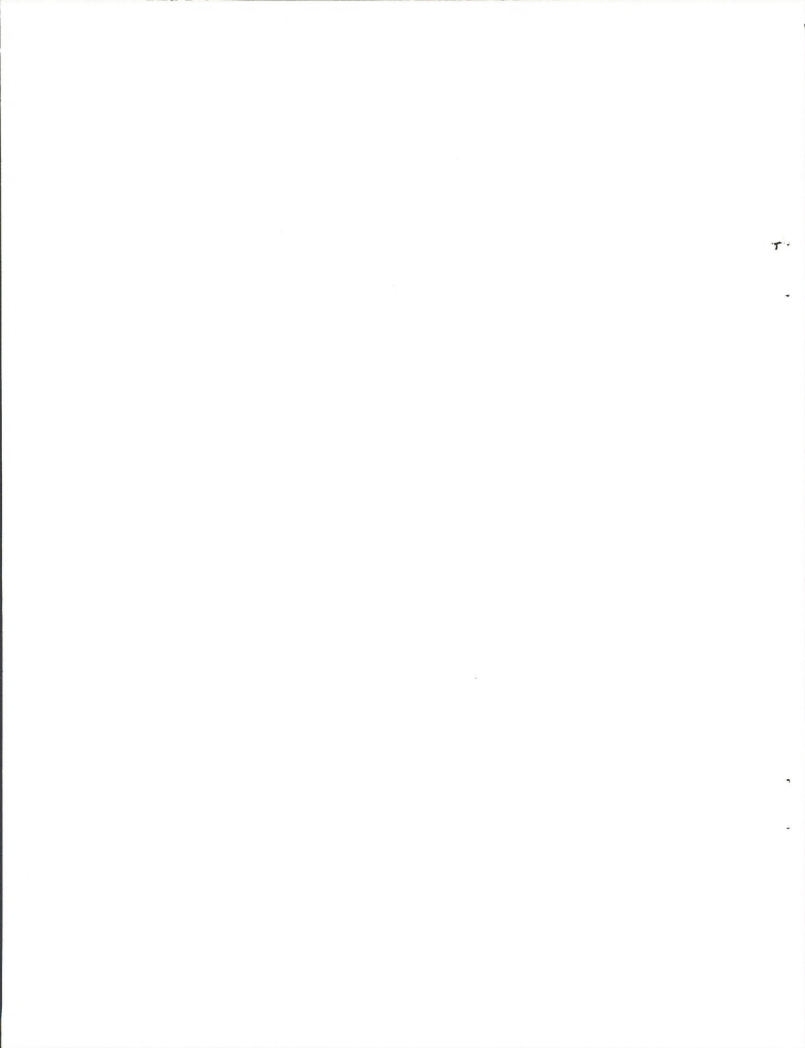
Appendix A

POWDER RIM ALLOTMENT - PASTURE D

C5-1
Artr-Agsm Type
0 slope
22 June 1970

C5-2
Artr-Atga-Agsm Type
SW exp., 2.25° slope
22 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	16.41			75	Artr	2.05			20
Atco	0.45			15	Atga	0.23			25
					Atco	0.50			5
Shrub Total	16.86				Tesp	0.03			5
Agsm	1.54	66.10	69.68	75	Shrub Total	2.81			
Orhy	0.31	13.30	14.03	15	Agsm	4.03	87.22	89.56	75
Pose	0.20	8.58	9.05	65	Orhy	0.13	2.81	2.89	15
Sihy	0.16	6.87	7.24	60	Pose	0.29	6.28	6.44	40
Grass Total	2.21	94.85	100.00		Sihy	0.05	1.08	1.11	10
Aspu	0.01	0.43	8.33	5	Grass Total	4.50	97.39	100.00	
Phho	0.07	3.00	58.34	70	Lofo	0.01	0.22	8.33	5
Phlo	0.03	1.29	25.00	10	Pefr	0.01	0.22	8.33	10
Sili	0.01	0.43	8.33	5	Phho	0.05	1.08	41.68	50
Forb Total	0.12	5.15	100.00		Phlo	0.02	0.43	16.67	20
Grass and					Sili	0.01	0.22	8.33	5
Forb Total	2.33	100.00			Trgy	0.01	0.22	8.33	5
					Lare	0.01	0.22	8.33	10
					Forb Total	0.12	2.61	100.00	
					Grass and				
					Forb Total	4.62	100.00		



POWDER RIM ALLOTMENT - PASTURE D

Appendix A

C6-1
Artr-Agsm Type
E exp., 0.5° slope
22 June 1970

C7-1
Juos Type
S exp., 5.5° slope
22 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	11.53			70	Arno	5.20			30
Shrub Total	11.53				Artr	2.51			20
					Chvi	0.16			10
Agsm	3.95	78.84	82.82	100	Juos	14.75			25
Kocr	0.15	2.99	3.14	20	Putr	7.28			25
Pofe	0.25	4.99	5.24	20	Shrub Total	29.90			
Pose	0.16	3.19	3.35	55					
Sihy	0.25	4.99	5.24	25	Agsm	1.13	58.21	64.95	65
Stco	0.01	0.20	0.21	5	Agsp	0.40	20.62	22.99	20
Grass Total	4.77	95.20	100.00		Kocr	0.07	3.61	4.02	15
Aggl	0.02	0.40	8.33	15	Pofe	0.10	5.15	5.75	10
Alte	0.02	0.40	8.33	15	Pose	0.03	1.55	1.72	10
Crepis spp.	0.02	0.40	8.33	15	Sihy	0.01	0.52	0.57	5
Eren	0.07	1.40	29.17	70	Grass Total	1.74	89.66	100.00	
Phho	0.01	0.20	4.17	5	Arfe	0.01	0.52	5.00	10
Phlo	0.04	0.80	16.67	40	Asdi	0.01	0.52	5.00	5
Trgy	0.02	0.40	8.33	20	Crepis spp.	0.01	0.52	5.00	10
Lare	0.04	0.80	16.67	35	Er	0.01	0.52	5.00	5
Forb Total	0.24	4.80	100.00		Erpu	0.06	3.09	30.00	55
Grass and					Pefr	0.02	1.03	10.00	15
Forb Total	5.01	100.00			Phho	0.01	0.52	5.00	10
					Sein	0.01	0.52	5.00	5
					Trgy	0.04	2.06	20.00	35
					Gora	0.01	0.52	5.00	5
					Posa	0.01	0.52	5.00	5
					Forb Total	0.20	10.34	100.00	
					Grass and				
					Forb Total	1.94	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE D

C8-1
Atga Type
S exp., 2.25° slope
22 June 1970

C10-1
Atco Type
NE exp., 2° slope
23 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Atga	4.36			65	Atco	2.87			45
					Eula	0.92			40
Shrub Total	4.36				Shrub Total	3.79			
Agsm	0.30	16.13	16.67	15	Agsm	0.01	1.03	1.12	5
Orhy	0.50	26.88	27.78	35	Orhy	0.19	19.59	21.35	30
Pose	0.14	7.53	7.78	20	Pose	0.22	22.68	24.72	45
Sihy	0.86	46.23	47.77	50	Sihy	0.03	3.09	3.37	5
Grass Total	1.80	96.77	100.00		Stco	0.39	40.22	43.82	50
					Brte	0.05	5.15	5.62	25
Cybu	0.02	1.08	33.33	15	Grass Total	0.89	91.76	100.00	
Lare	0.04	2.15	66.67	35					
Forb Total	0.06	3.23	100.00		Eren	0.01	1.03	12.50	10
					Alde	0.02	2.06	25.00	15
Grass and					Chde	0.01	1.03	12.50	5
Forb Total	1.86	100.00			Saka	0.04	4.12	50.00	35
					Forb Total	0.08	8.24	100.00	
					Grass and				
					Forb Total	0.97	100.00		



Appendix A

POWDER RIM ALLOTMENT - PASTURE D

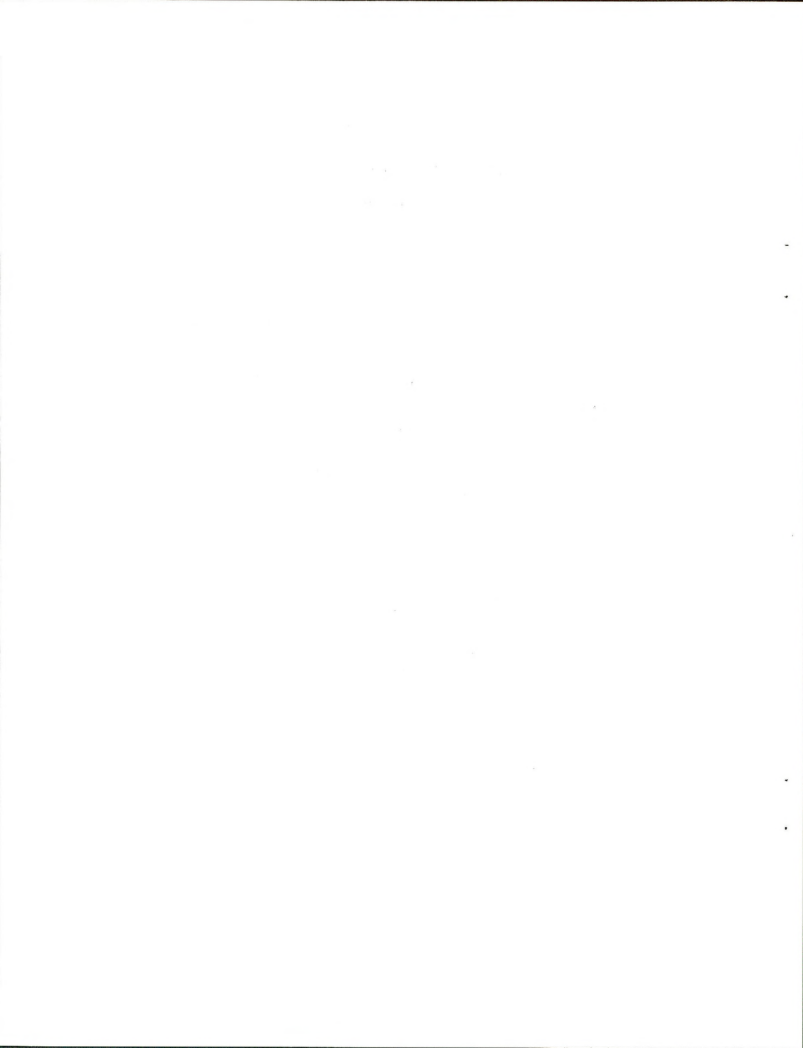
Exclosure

Atco Type
N exp., 2° slope

Outside
24 June 1970

Inside
24 June 1970

	Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.		Cover % Avg.	Comp. % all G&F	Comp. % by Group	% Freq.
Artr	2.31			60	Artr	2.93			25
Atco	1.31			20	Arsp	0.05			5
Chvi	0.70			15	Atco	0.08			10
Eula	0.10			5	Atga	0.10			5
					Chvi	0.15			5
Shrub Total	4.42				Shrub Total	3.31			
Orhy	0.02	1.31	1.41	15	Agsm	0.19	8.09	8.33	25
Pose	0.15	9.80	10.56	35	Orhy	0.13	5.53	5.70	20
Spcr	0.01	0.65	0.70	5	Pose	0.08	3.40	3.51	40
Stco	1.22	79.78	85.93	80	Stco	1.86	79.12	81.58	95
Brte	0.01	0.65	0.70	10	Brte	0.01	0.43	0.44	5
Feoc	0.01	0.65	0.70	10	Feoc	0.01	0.43	0.44	5
Grass Total	1.42	92.84	100.00		Grass Total	2.28	97.00	100.00	
Cyac	0.01	0.65	9.09	5	Alte	0.01	0.43	14.29	5
Eren	0.02	1.31	18.19	20	Arabis spp.	0.01	0.43	14.29	5
Lelu	0.01	0.65	9.09	10	Phlo	0.02	0.85	28.55	15
Lepu	0.01	0.65	9.09	5	Alde	0.01	0.43	14.29	10
Phlo	0.01	0.65	9.09	5	Depi	0.01	0.43	14.29	5
Spco	0.01	0.65	9.09	5	Erce	0.01	0.43	14.29	5
Erce	0.01	0.65	9.09	10	Forb Total	0.07	3.00	100.00	
Lare	0.01	0.65	9.09	10	Grass and Forb Total	2.35	100.00		
Lupu	0.01	0.65	9.09	5					
Gisi	0.01	0.65	9.09	5					
Forb Total	0.11	7.16	100.00						
Grass and Forb Total	1.53	100.00							



Appendix B

Table 1. Percent utilization of grasses and shrubs after winter use by sheep during 1969-70. The figures are average utilization values for sampling sites obtained by estimating use within seven percentage classes and dividing by frequency of occurrence. For grasses, only use on new growth was estimated. For shrubs, utilization of the previous seasons growth was considered. Ten or more Artr and Atga bushes were examined at each site where they occurred. For other species occurrence, hence sample size, varies and only a rough index to utilization is obtained. The pastures were sampled on 25 April 1970.

Pasture	Sampling Site	Agsm	Orhy	Stco	Pofe	Pose	Kocr	Agsp	Sihy	Cafi	Hija	Brte	Artr	Arsr	Arpe	Atco	Atga	Eula	Chvi
Pasture A (Grazed 1 Nov.- 30 Apr.)	C1-1	5			0	0		0											
	C2-1	0				5		0											
	C3-1	5	0			0							12						
	C4-1	0				10							9						
	C5-1	0	15			0							5						
	C6-1	0	0			5			0				5						
	C7-1	0			0	5	0	0					18						
	Exc. I	0				0	0												
Pasture B (Grazed 1 Nov.-30 Apr.)	C1-1		0						0								52		
	C2-1	0	0	0		0							8					5	
	C3-1	0	5			5			0										
	C4-1	50		13		0				5	0		13					0	
	C5-1	18				18		5					36						
	C6-1	0	0			0							5						
	C7-1	0	0			12			0				0		7		50		11
	C8-1	0				13							27			0			
	C9-1	0	0	0		5			5				9						
	C10-1	0	0			5			0				5						
	Exc. I		5			0							5	0			12		
Pasture C (Grazed 1 Nov.-30 Apr.)	C1-1	0	9			20							14				38		5
	C2-1	5	28	50					0				9			0	0		5
	C3-1	5	0			5			0				20	0					
	C4-1	0		23		0			28				9						
	C5-1		12	0					0				10						
	C6-1	16	0	12		5			0		0		16						
	Exc. I	5		38		0			8				14						

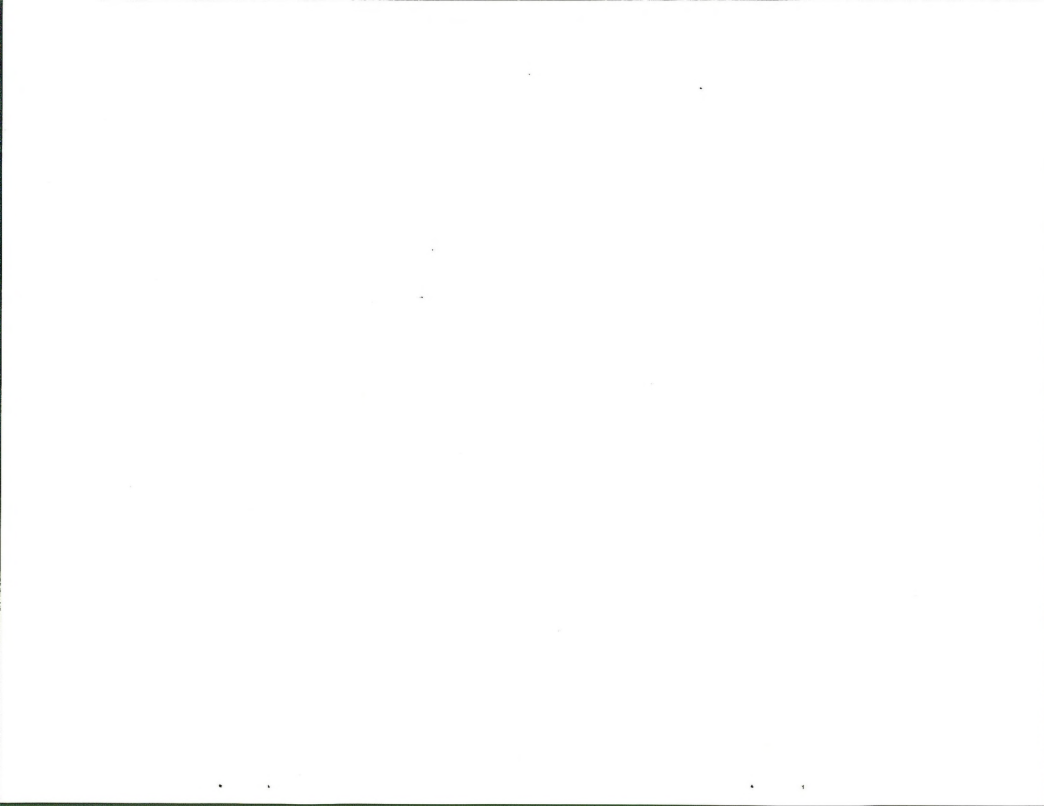
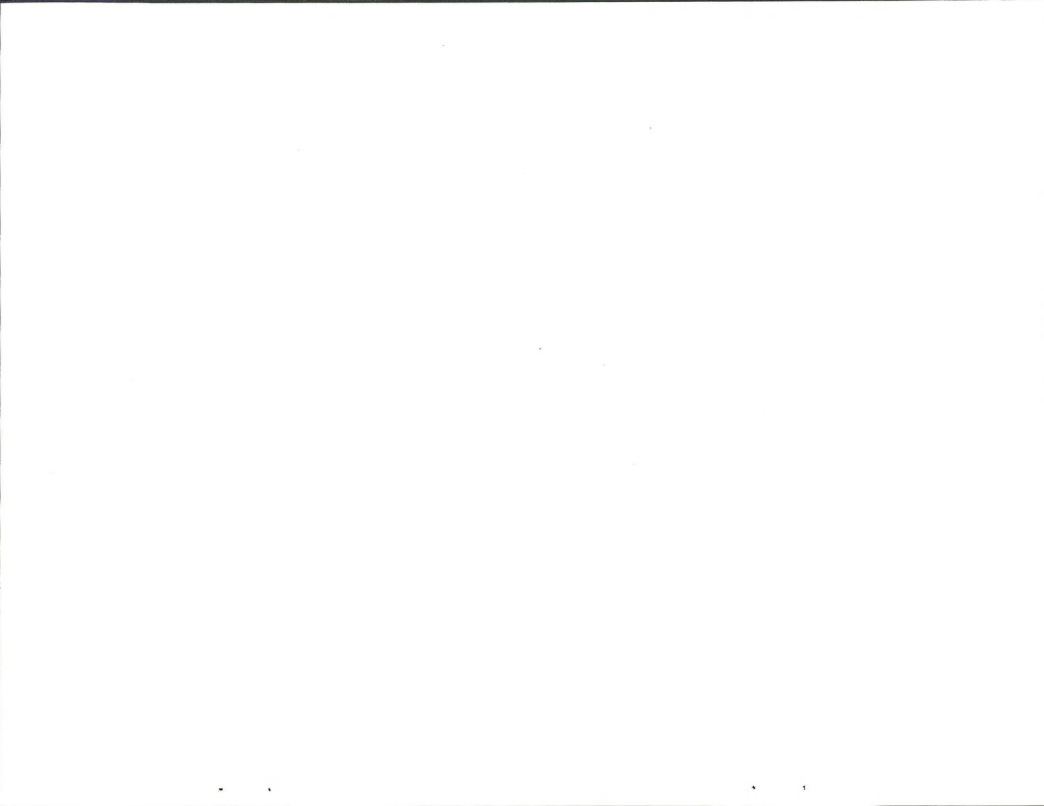


Table 1 (Cont'd)

Pasture	Sampling Site	Agsm	Orhy	Stco	Pofe	Pose	Kocr	Agsp	Sihy	Cafi	Hija	Brte	Artr	Arsp	Arpe	Atco	Atga	Eula	Chvi
Pasture D	C1-1	18	5	15		0						14						25	25
(Grazed	C2-1	7	0	44		5			0			21							
1 Nov.-	C3-1	14	15			12						21				15			
31 Mar.)	C4-1	No sample																	
	C5-1	5	5			5			0			15				5	54		
	C6-1	No sample																	
	C8-1	No sample																	
	C10-1	0	21	12		8						5	16			5	70		0



Appendix B

Table 2. Percent utilization of grasses and shrubs other than the key forage species (western wheatgrass) following summer grazing by cattle during 1970. The figures are average utilization values for sampling sites obtained by estimating use within seven percentage classes and dividing by frequency of occurrence. Occurrence, hence sample size, varies for species and only a rough index to utilization is obtained. Sampling dates were as follows: Oppenhiemer East and West, 28 and 29 Sep.; Pasture A and B, 17 Oct.; Pasture C, 31 Oct.; Poison Buttes, 31 Oct. and 5 Nov.

Pasture	Sampling Site	Orhy	Stco	Pofe	Pose	Kocr	Agsp	Sihy	Hija	Cael	Cafi	Brte	Feoc	Artr	Arsp	Arpe	Atco	Atga	Eula	Save
Poison Buttes	C1-1	70	46		5			0		7				0						
	C2-1		23		5									0						
(Grazed	C3-1	50	22		5			0		21				0						
15 Apr.-	C4-1	70	0		4				0					0			0			
15 Nov.)	C5-1	30			0			6						0	0			0		
	C6-1				5															
	C7-1				0	50														
	C8-1		25	57	0									0						
	C9-1		80		8					0				0						
	C10-1	60	53		0			0				0		0			0			
	Exc. I		70	50	0	38														
Oppenhiemer	C1-1		65		0			12		5		5		0						
East	C2-1	15	36		5			28				0	0						0	
(Grazed	C3-1		25		5			8				0		0						
15 Jul.-	C4-1		28		1			5						0			0			0
30 Sep.)	C5-1		0		1			0						0						
	C6-1				5			0						0			0			
	C7-1	35			0			0						0						
	Exc.				1					27				0						
Oppenhiemer	C1-1	30	15		5			0						0	0			0		
West	C2-1	0			5			0		42				0						
(Grazed	C3-1		35		0			5				0								
1 May-	C4-1	18	46		0									0						
15 Jul.)	C5-1		28		0			0		0				0						
	C6-1	5			0			0						0	0			0		
	C7-1	20	30		0			5						0						
	Exc.		35		0					0	0	0		0						



Table 2 (Cont'd)

Pasture	Sampling Site	Orhy	Stco	Pofe	Pose	Kocr	Agsp	Sihy	Hija	Cael	Cafi	Brte	Feoc	Artr	Arsp	Arpe	Atco	Atga	Eula
Pasture A (Grazed 20 Jul.- 31 Oct.)	C1-1	73	48				26	25											
	C2-1		38	28	5		23	5											
	C3-1	37			0								0						
	C4-1	0			0			5					0						
	C5-1	75	0		0			0					0						0
	C6-1	50	0		0	50		0					0						
	C7-1	43			0	8	7						0						
	Exc.	50	48	44	5	54	19	5					0						
Pasture B (Not on grazing schedule)	C1-1	17			0			0										0	
	C2-1	10	8		0						5			0					
	C3-1	7	0		0			0				0		0					
	C4-1	5	20		0				0	0	7			0					
	C5-1				0	0	0							0					
	C6-1	0			0			0		0		0							
	C7-1	15			0			5								0		0	
	C8-1	17			0			0						0				0	
	C9-1	10	28		5			0						0					
	C10-1	0				0	0	0						0					
	Exc.I	11			0			0						0	0			0	
Pasture C (Not on grazing schedule)	C1-1	17			0			0						0					
	C2-1	6	0					0						0			5		
	C3-1	33	22		0			0		0				0			0		
	C4-1	No sample																	
	C5-1	No sample																	
	C6-1	27	34		5			8						0			0		
	Exc.I	90	20		5			0						0			0		
	Stco type	18	28					0											

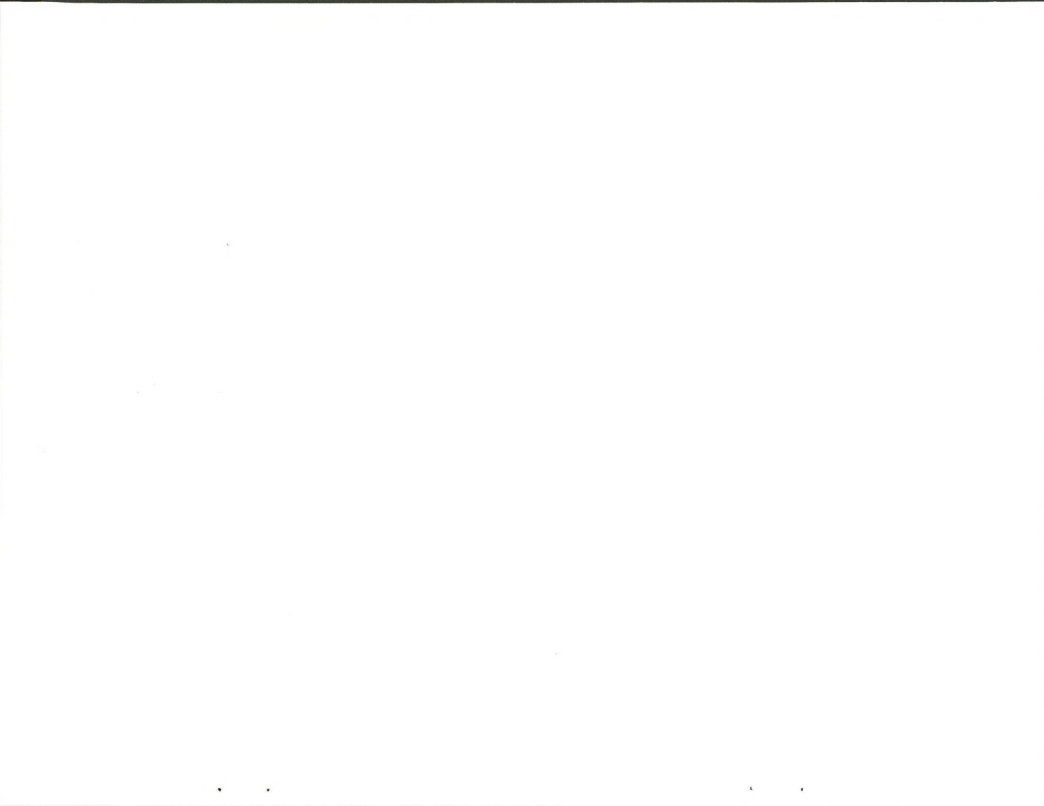
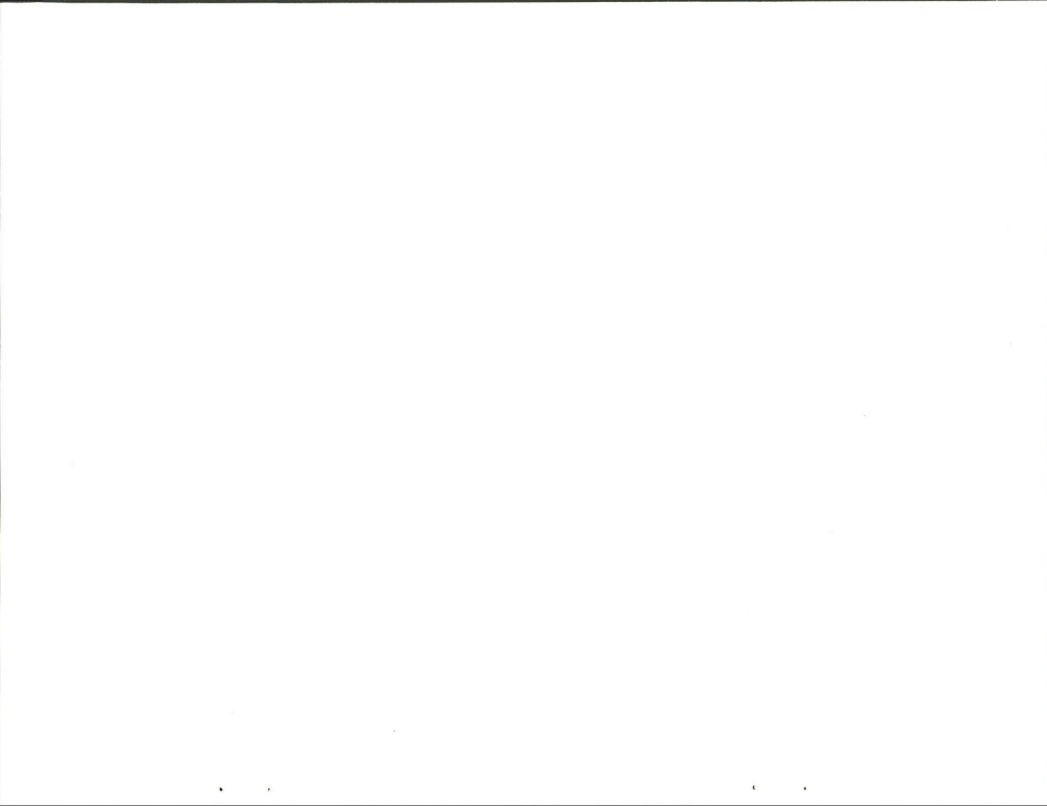


Table 2 (Cont'd)

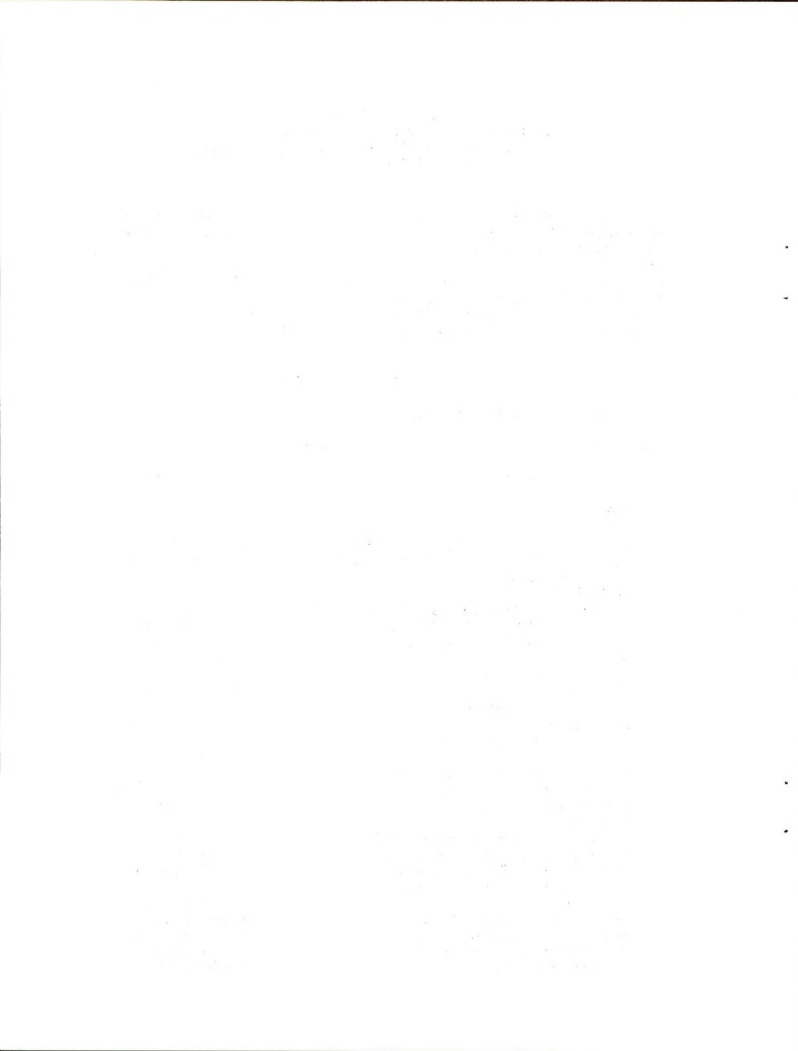
Pasture	Sampling Site	Orhy	Stco	Pofe	Pose	Kocr	Agsp	Sihy	Hija	Cael	Cafi	Brte	Feoc	Artr	Arsp	Arpe	Atco	Atga	Eula	Save
Pasture D	C1-1	62	48		5			10		15				0			15	5		
(Grazed 1	C2-1	34	61		5			0				0			0		5			
May -	C3-1		44		7			0		15				0						
31 Oct.)	C4-1	48			10										0		6		0	
	C5-1	46			4		50	5						0	0		0	5		
	C6-1	22	24		0			5						0			0			
	C8-1	No sample																		
	C10-1	63	52		0			15						0			0			



Checklist of Plants
Collected on the Grazing Systems Study Area
West of Baggs in Carbon and Sweetwater Counties, Wyoming
Revised March, 1971 by R. P. Gibbens

The collections in the Rocky Mountain Herbarium of the University of Wyoming were used to verify identifications of plants in the following list. Nomenclature follows the treatment of the herbarium collections and is not based on a particular published flora. Common names were taken from the following publication: Beetle, A. A. 1970. Recommended Plant Names. Res. Jour. 31, Agr. Exp. Sta., Univ. of Wyo. 124 p. Plant names marked with an asterisk (*) denote those which are the first recorded collection in Wyoming.

Cupressaceae	Cypress Family	
Juniperus osteosperma (Torr.) Little		Utah juniper
Juncaginaceae	Arrowgrass Family	
Triglochin maritima L.		Marsh arrowgrass
Gramineae	Grass Family	
Agropyron cristatum (L.) Gaertn.		Crested wheatgrass
Agropyron spicatum (Pursh) Scribn. & Smith		Bluebunch wheatgrass
Agropyron smithii Rydb.		Western wheatgrass
Agropyron smithii Rydb.		Pubescent western wheatgrass
var. molle (Scribn. & Smith) M.E. Jones		
Agropyron dasystachyum (Hook.) Scribn.		Thickspike wheatgrass
Aristida fendleriana Steud.		Fendler threeawn
Bromus commutatus Schrad.		Hairy brome
Bromus inermis Leyss.		Smooth brome
Bromus tectorum L.		Cheatgrass brome
Calamagrostis montanensis Scribn.		Plains reedgrass
Dactylis glomerata L.		Common orchardgrass
Distichlis spicata (L.) Greene		
var. stricta (Torr.) Beetle		Inland saltgrass
Elymus cinereus Scribn. & Merr.		Basin wildrye
Festuca octoflora Walt.		Common sixweeks fescue
Hordeum jubatum L.		Foxtail barley
Hordeum jubatum L.		
var. caespitosum (Scribn.) Hitchc.		Bobtail barley
Hilaria jamesii (Torr.) Benth.		Galleta hilaria
Koeleria cristata (L.) Pers.		Prairie junegrass
Oryzopsis hymenoides (Roem. & Schult.)		
Ricker		
Phragmites communis Trin.		Indian ricegrass
Poa canbyi (Scribn.) Piper		Common reed
Poa fendleriana (Steud.) Vasey		Canby bluegrass
Poa pratensis L.		Mutton bluegrass
		Kentucky bluegrass



Appendix C

Gramineae (con't)

<i>Poa secunda</i> Presl.	Sandberg bluegrass
<i>Puccinellia distans</i> (L.) Park.	Weeping alkaligrass
<i>Sitanion hystrix</i> ((Nutt.) J. G. Smith	Bottlebrush squirreltail
<i>Spartina gracilis</i> Trin.	Alkali cordgrass
<i>Sporobolus cryptandrus</i> (Torr.) A. Gray	Sand dropseed
<i>Stipa comata</i> Trin. & Rupr.	Needleandthread
<i>Stipa viridula</i> Trin.	Green needlegrass

Cyperaceae

Sedge Family

<i>Carex eleocharis</i> Bailey	Needleleaf sedge
<i>Carex filifolia</i> Nutt.	Threadleaf sedge
<i>Scirpus nevadensis</i> S. Wats	Nevada bulrush
<i>Scirpus paludosus</i> A. Nels.	Alkali bulrush

Juncaceae

Rush Family

<i>Juncus balticus</i> Willd.	Baltic rush
var. <i>montanus</i> Engelm.	

Salicaceae

Willow Family

<i>Populus tremuloides</i> Michx.	Quaking aspen
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Liliaceae

Lily Family

<i>Allium acuminatum</i> Hook.	Tapertip onion
<i>Allium textile</i> Nels. & Macbr.	Prairie onion
* <i>Androstephium breviflorum</i> S. Wats.	Purple funnellily
<i>Calochortus nuttallii</i> Torr.	Sego mariposalily

Santalaceae

Sandalwood Family

<i>Comandra pallida</i> A.D.C.	Pale bastardtoadflax
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Polygonaceae

Buckwheat Family

<i>Eriogonum brevicaulis</i> Nutt.	Shortstem wildbuckwheat
<i>Eriogonum cernuum</i> Nutt.	Nodding wildbuckwheat
<i>Eriogonum microthecum</i> Nutt.	
var. <i>laxiflorum</i> Benth.	Slenderbush wildbuckwheat
<i>Eriogonum ovalifolium</i> Nutt.	Cushion wildbuckwheat
<i>Eriogonum umbellatum</i> Torr.	
var. <i>intectum</i> A. Nels.	Sulphur wildbuckwheat
<i>Polygonum aviculare</i> L.	Prostrate knotweed
<i>Polygonum sawatchense</i> Small	Sawatch knotweed
<i>Rumex hymenosepalus</i> Torr.	
var. <i>salinus</i> (A.Nels.) Rechinger	Canaigre dock
<i>Rumex triangulivalvis</i> (Danser) Rech. f.	Trianglevalved dock



Appendix C

Chenopodiaceae

Goosefoot Family

<i>Atriplex argentea</i> Nutt.	Tumbling saltbush
<i>Atriplex canescens</i> (Pursh.) Nutt.	Fourwing saltbush
<i>Atriplex confertifolia</i> (Torr. & Frem.) S. Wats.	Shadscale saltbush
<i>Atriplex dioeca</i> (Nutt.) Macbr.	Scurfless saltbush
<i>Atriplex gardneri</i> (Moq.) D. Dietr.	Nuttall saltbush
<i>Atriplex patula</i> L.	
ssp. <i>hastata</i> (L.) Hall & Clem.	Tathen saltbush
<i>Atriplex wolfii</i> S. Wats.	Wolf saltbush
<i>Bassia hyssopifolia</i> (Pall.) Kuntze	Fivehock smotherweed
<i>Chenopodium atrovirens</i> Rydb.	Dark goosefoot
<i>Chenopodium farlandieri</i> Moq.	
var. <i>zschackei</i> (Murr.) Murr.	Pitseed goosefoot
<i>Chenopodium dessicatum</i> A. Nels.	Desert goosefoot
<i>Chenopodium fremontii</i>	
forma <i>farinosum</i> Aellen	Fremont goosefoot
<i>Eurotia lanata</i> (Pursh.) Moq.	Common winterfat
<i>Grayia spinosa</i> (Hook.) Moq.	Spiny hopsage
<i>Halogeton glomeratus</i> (M. Bieb) C. A. Meyer	Common halogeton
<i>Kochia americana</i> S. Wats.	Greenmolly summercypress
<i>Monolepis nuttalliana</i> (R. & S.) Greene	Nuttall monolepis
<i>Monolepis pusilla</i> Torr. ex S. Wats.	Low monolepis
<i>Salicornia europaea</i> L.	
ssp. <i>rubra</i> (A. Nels.) Breitung	Marshfire glasswort
<i>Salsola kali</i> L.	Common russianthistle
<i>Sarcobatus vermiculatus</i> (Hook.) Torr.	Black greasewood
<i>Suaeda depressa</i> (Pursh) S. Wats.	
var. <i>erecta</i> S. Wats.	Pursh seepweed
<i>Suaeda fruticosa</i> (L.) Forsk.	Alkali seepweed
<i>Suaeda nigra</i> (Raf.) Macbride	Black seepweed
<i>Suaeda occidentalis</i> S. Wats.	Western seepweed

Amaranthaceae

Amaranth Family

<i>Amaranthus gracizans</i> L.	Prostrate pigweed
<i>Amaranthus retroflexus</i> L.	Redroot pigweed

Nyctaginaceae

Four-o'clock Family

<i>Tripterocalyx micranthus</i> (Torr.) Hook.	Annual sandpuffs
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Portulacaceae

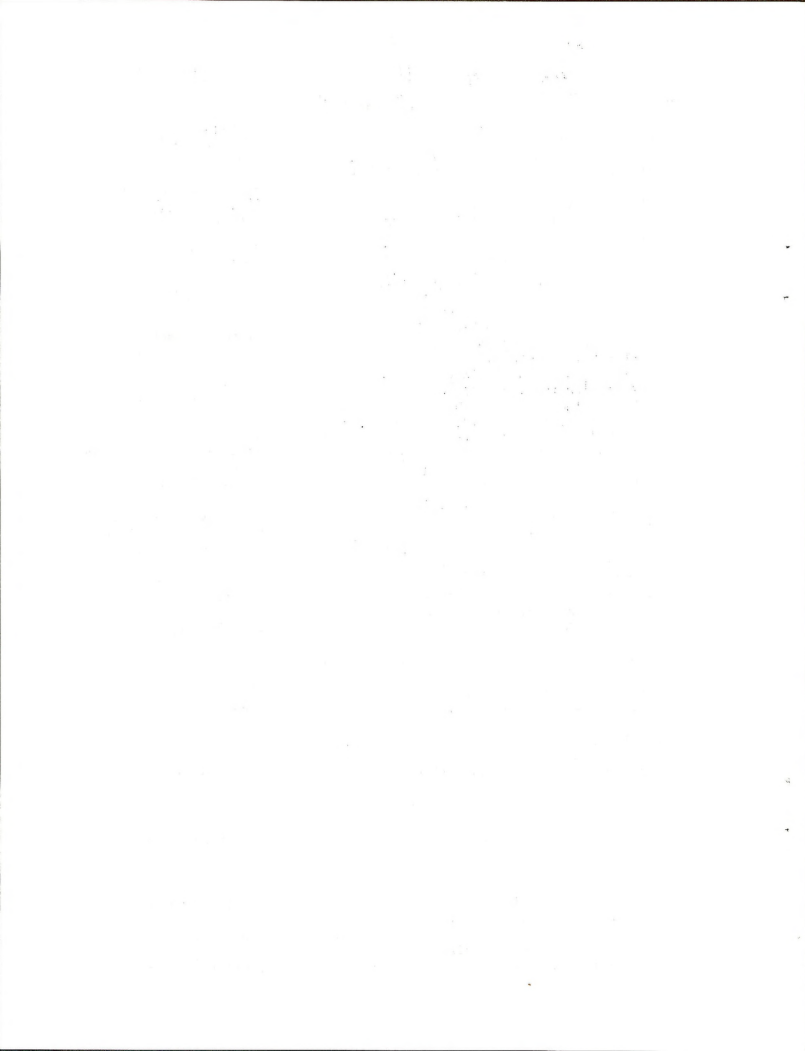
Purslane Family

<i>Lewisia rediviva</i> Pursh	Bitterroot lewisia
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Caryophyllaceae

Pink Family

* <i>Arenaria fendleri</i>	Fendler sandwort
var. <i>eastwoodiae</i> Rydb.	
<i>Arenaria hookeri</i>	Hooker sandwort
var. <i>desertorum</i> Maguire	
<i>Arenaria nuttallii</i> Pax	Nuttall sandwort



Appendix C

Ranunculaceae

Crowfoot Family

Delphinium nelsoni Greene
Ranunculus cymbalaria Pursh
var. *saximontana* Fern.

Nelson larkspur
Shore buttercup

Crucifereae

Mustard Family

Alyssum desertorum Stapf
Arabis cobrensis Jones
**Arabis crandellii* Robinson
Arabis holboellii Hornem.
var. *retrofracta* (Graham) Rydb.
Arabis lignifera A. Nels.
**Arabis pulchra* Jones
var. *pallens* Jones
Camelina microcarpa Andrz.
Cardaria pubescens (Meyer) Rollins
var. *elongata* Rollins
Caulanthus crassicaulis (Torr.) Watson
Chorispora tenella (Pall.) D.C.
Descurania pinnata (Walt.) Britt.
ssp. *intermedia* (Rydb.) Detling
Descurania pinnata (Walt.) Britt.
ssp. *halictorum* (Ckll.) Detling
Descurania sophia (L.) Webb.
Erysimum asperum (Nutt.) D.C.
Lesquerella alpina (Nutt. ex T. & G.) S. Wats.
ssp. *condensata* (Nels.) Rollins & Shaw
Lesquerella ludoviciana (Nutt.) S. Wats
Lepidium montanum Nutt.
Lepidium perforliatum L.
Physaria australis (Payson) Rollins
Sisymbrium elegans (Jones) Payson
Sisymbrium linifolium (Nutt.)
Nutt. ex T. & G.
Stanleya pinnata (Pursh) Britt.
var. *integrifolia* (Jones) Rollins
Streptanthella longirostris (S. Wats.) Rydb.
Streptanthus cordatus Nutt. ex T. & G.
Thelypodium integrifolium (Nutt.) Endl.
Thlaspi arvense L.

Desert alyssum
Cobren rockcress
Crandell rockcress
Holboell rockcress
Woody rockcress
Palebeauty rockcress
Littleseed falseflax
Hairy whitetop
Thickstem wildcabbage
Common bluemustard
Pinnate tansymustard
Pinnate tansymustard
Flixweed tansymustard
Plains wallflower
Tufted bladderpod
Foothill bladderpod
Mountain pepperweed
Clasping pepperweed
Common twinpod
Showy hedgemustard
Narrowleaf hedgemustard
Desert princesplume
Beakpod nippletwist
Heartleaf twistflower
Entireleaved thelypod
Field pennycress

Capparidaceae

Caper Family

Cleome lutea Hook.
Cleome serrulata Pursh

Yellow beeplant
Rockymountain beeplant

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Rosaceae

Rose Family

<i>Amelanchier alnifolia</i> Nutt.	Saskatoon serviceberry
<i>Cercocarpus montanus</i> Raf.	True mountainmahogany
<i>Prunus virginiana</i> L.	
var. <i>melanocarpa</i> (A. Nels.) Sarg.	Black chokecherry
<i>Purshia tridentata</i> (Pursh) D.C.	Antelope bitterbrush

Leguminosae

Pea Family

<i>Astragalus cibarius</i> Sheld.	Silky milkvetch
<i>Astragalus diversifolius</i> A. Gray	Meadow milkvetch
<i>Astragalus drummondii</i> Dougl. ex Hook.	Drummond milkvetch
<i>Astragalus geyeri</i> A. Gray	Geyer milkvetch
<i>Astragalus haydenianus</i> A. Gray	Hayden milkvetch
<i>Astragalus jejunus</i> Wats.	Starveling milkvetch
<i>Astragalus pectinatus</i> Dougl.	
var. <i>platyphyllus</i> Jones	Fineleaved milkvetch
<i>Astragalus pubentissimus</i> T. & G.	Greenriver milkvetch
<i>Astragalus purshii</i> Dougl. ex Hook.	Pursh milkvetch
<i>Astragalus spatulatus</i> Sheld.	Spoonleaf milkvetch
<i>Astragalus tenellus</i> Pursh	Pulse milkvetch
<i>Glycyrrhiza lepidota</i> Pursh	American licorice
<i>Hedysarum boreale</i> Nutt.	
var. <i>cinerascens</i> (Rydb.) Rollins	Northern sweetvetch
<i>Lupinus argenteus</i> Pursh	
var. <i>tenellus</i> (Dougl. ex G. Don) Dunn	Silvery lupine
<i>Lupinus pusillus</i> Pursh	Rusty lupine
<i>Oxytropis multiceps</i> (Nutt.) ex T. & G.	Flowery loco
<i>Oxytropis sericea</i> (Nutt.) ex T. & G.	Silky loco
<i>Psoralea lanceolata</i> Pursh	Lemon scurfpea
<i>Thermopsis rhombifolia</i> Nutt. ex Rich.	Prairie thermopsis
<i>Trifolium gymnocarpon</i> Nutt.	Hollyleaf clover
<i>Vicia americana</i> Muhl. ex Willd.	
var. <i>minor</i> Hook.	Mat american vetch
<i>Vicia americana</i> Muhl. ex Willd.	
var. <i>truncata</i> (Nutt.) Brewer	American vetch

Linaceae

Flax Family

<i>Linum lewisii</i> Pursh	Lewis flax
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Euphorbiaceae

Spurge Family

<i>Euphorbia robusta</i> (Engelm.) Small	Robust spurge
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Anacardiaceae

Sumac Family

<i>Rhus trilobata</i> Nutt. ex. T. & G.	Skunkbush sumac
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Malvaceae

Mallow Family

<i>Sphaeralcea coccinea</i> (Pursh) Rydb.	Scarlet globemallow
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Tamaricaceae	Tamarisk Family	
<i>Tamarix pentandra</i> Pall.		Saltcedar tamarisk
Violaceae	Violet Family	
<i>Viola nuttallii</i> Pursh var. <i>vallicola</i> (A. Nels.) St. John		Nuttall violet
Loasaceae	Blazing-Star Family	
<i>Mentzelia albicaulis</i> (Hook.) T. & G.		Whitestem mentzelia
<i>Mentzelia decapetala</i> (Pursh ex Sims) Urban & Gilg		Terpetal mentzelia
<i>Mentzelia dispersa</i> S. Wats.		Bushy mentzelia
Cactaceae	Cactus Family	
<i>Opuntia polyacantha</i> Haw.		Plains pricklypear
Onagraceae	Evening-primrose Family	
<i>Epilobium paniculatum</i> Nutt. ex T. & G. forma <i>adenocaulon</i> Hausskn.		Sticky willowherb
<i>Gayophytum ramosissimum</i> T. & G.		Branchy groundsmoke
<i>Oenothera andina</i> Nutt. ex T. & G.		Andean sundrops
<i>Oenothera caespitosa</i> Nutt.		Tufted eveningprimrose
<i>Oenothera contorta</i> Dougl. ex Lehm. var. <i>flexuosa</i> (A. Nels.) Munz		Plains eveningprimrose
<i>Oenothera pallida</i> Lindl. ssp. <i>trichocalyx</i> (Nutt. ex T. & G.) Munz & Klein		Pale eveningprimrose
<i>Oenothera scapoidea</i> T. & G.		Barestem eveningprimrose
Umbelliferae	Parsley Family	
<i>Cymopterus acaulis</i> (Pursh) Raf.		Stemless springparsley
<i>Cymopterus bulbosus</i> A. Nels.		Onion springparsley
<i>Lomatium foeniculaceum</i> (Nutt.) C. & R.		Hairyseed lomatium
<i>Lomatium simplex</i> (Nutt.) McBride		Narrowleaf lomatium
<i>Pteryxla terebinthina</i> (Hook.) C. & R. var. <i>calcareae</i> (Jones) Mathias		Ferny springparsley
Asclepiadaceae	Milkweed Family	
<i>Asclepias cryptoceras</i> S. Wats.		Pallid milkweed
<i>Asclepias speciosa</i> Torr.		Showy milkweed
Polemoniaceae	Phlox Family	
<i>Gilia aggregata</i> (Pursh) Spreng.		Skyrocket gilia
<i>Gilia congesta</i> Hook.		Ballhead gilia
<i>Gilia leptomeria</i> A. Gray		Smallflower gilia
<i>Gilia pumila</i> Nutt.		Dwarf gilia
<i>Gilia sinuata</i> Dougl. ex Benth. var. <i>tweedyi</i> (Rydb.) Cronq.		Rosy gilia



Polemoniaceae (Cont'd)

Phlox Family

<i>Gilia spicata</i> Nutt.	Spike gilia
<i>Gilia tenerrima</i> A. Gray	Tawny gilia
<i>Gymnostris parvula</i> Heller	Leafless falsephlox
<i>Leptodactylon pungens</i> (Torr.) Nutt.	Granite gilia
<i>Linanthus septentrionalis</i> Mason	Sevenstar flaxflower
<i>Microsteris gracilis</i> (Hook.) Greene	
var. <i>humilior</i> (Hook.) Cronq.	Microsteris
<i>Phlox hoodii</i> Rich.	Hoods phlox
<i>Phlox longifolia</i> Nutt.	Longleaf phlox

Hydrophyllaceae

Waterleaf Family

<i>Nama densum</i> Lemmon	
var. <i>parviflorum</i> (Greenm.) C.L. Hitchc.	Leafy nama
<i>Phacelia glandulosa</i>	
var. <i>deserta</i> (A. Nels.) Brand	Desert phacelia

Boraginaceae

Borage Family

<i>Cryptantha bradburiana</i> Payson	Minerscandle cryptantha
<i>Cryptantha caespitosa</i> (A. Nels.) Payson	Tufted cryptantha
<i>Cryptantha flava</i> (A. Nels.) Payson	Yellow cryptantha
<i>Cryptantha flavoculata</i> (A. Nels.) Payson	Roughseed cryptantha
<i>Cryptantha kelseyana</i> Greene	Kelsey cryptantha
* <i>Cryptantha watsonii</i> (A. Gray) Greene	Watson cryptantha
<i>Lappula redowskii</i> (Hornem.) Greene	
var. <i>occidentalis</i> (S. Wats.) Rydb.	Bluebur stickseed
<i>Lithospermum incisum</i> Lehm.	Narrowleaf gromwell
<i>Lithospermum ruderales</i> Dougl. ex Lehm.	Wayside gromwell
<i>Mertensia oblongifolia</i> (Nutt.) G. Don	
var. <i>nevadensis</i> (A. Nels.) L. Williams	Oblongleaf bluebells

Scrophulariaceae

Figwort Family

<i>Castilleja chromosa</i> A. Nels.	Desert indianpaintbrush
<i>Collinsia parviflora</i> Dougl. ex Lindl.	Smallflowered blueeyedmary
<i>Cordylanthus raemosus</i> Nutt. ex Benth.	Bushy birdbeak
<i>Penstemon fremontii</i> T. & G.	Fremont penstemon
* <i>Penstemon mensarum</i> Pennell	Grandmesa penstemon
<i>Penstemon pachyphyllus</i> A. Gray	Thickleaf penstemon
<i>Penstemon radicosus</i> A. Nels.	Matroot penstemon
<i>Penstemon strictus</i> Benth.	Rockymountain penstemon

Orobanchaceae

Broomrape Family

<i>Orebanche fasciculata</i> Nutt.	Purple broomrape
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Rubiaceae

Madder Family

* <i>Galium coloradoense</i> W.F. Wright	Colorado bedstraw
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Plantaginaceae

Plantain Family

<i>Plantago patagonica</i> Jacq.	Woolly plantain
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Caprifoliaceae

Honeysuckle Family

Symphoricarpos oreophilus A. Gray Mountain snowberry

Compositae

Sunflower Family

<i>Artemisia frigida</i> Willd.	Fringed sagewort
<i>Artemisia ludoviciana</i> Nutt.	Louisiana sagewort
<i>Artemisia nova</i> A. Nels.	Black sagebrush
<i>Artemisia peditifida</i> Nutt.	Birdfoot sagewort
<i>Artemisia spinescens</i> D. C. Eaton	Bud sagewort
<i>Artemisia tridentata</i> Nutt.	Basin big sagebrush
<i>Achillea millefolium</i> L.	
ssp. <i>lanulosa</i> (Nutt.) Piper	Common yarrow
<i>Agoseris glauca</i> (Pursh) Raf.	
var. <i>laciniata</i> (D.C. Eat.) Smiley	Pale agoseris
<i>Antennaria dimorpha</i> (Nutt.) T. & G.	Low pussytoes
<i>Antennaria rosea</i> Greene	Rose pussytoes
<i>Aster adsendens</i> Lindl.	Longleaf aster
<i>Aster arenosus</i> (Heller) Blake	Smallflower aster
<i>Aster pauciflorus</i> Nutt.	Fewflowered aster
<i>Balsamorhiza sagittata</i> (Pursh) Nutt.	Arrowleaf balsamroot
<i>Chaenactis douglasii</i> (Hook.) H. & A.	Douglas dustymaiden
<i>Chrysothamnus nauseosus</i> (Pall.) Britt.	
var. <i>albicaulis</i> (Nutt.) Rydb.	Rubber rabbitbrush
<i>Chrysothamnus nauseosus</i> (Pall.) Britt.	
var. <i>artus</i> (A. Nels.) Cronq.	Rubber rabbitbrush
<i>Chrysothamnus nauseosus</i> (Pall.) Britt.	
var. <i>glabratus</i> (Gray) Cronq.	Rubber rabbitbrush
<i>Chrysothamnus parryi</i> (A. Gray) Greene	
ssp. <i>howardii</i> (Parry) H. & C.	Parry rabbitbrush
<i>Chrysothamnus vicidiflorus</i> (Hook.) Nutt.	
ssp. <i>lanceolatus</i> (Nutt.) H. & C.	Douglas rabbitbrush
<i>Chrysothamnus vicidiflorus</i> (Hook.) Nutt.	
ssp. <i>linifolius</i> (Greene) H. & C.	Flaxleaf rabbitbrush
<i>Chrysothamnus vicidiflorus</i> (Hook.) Nutt.	
ssp. <i>pumilus</i> (Nutt.) H. & C.	Low douglas rabbitbrush
<i>Chrysothamnus vicidiflorus</i> (Hook.) Nutt.	
ssp. <i>vicidiflorus</i>	Douglas rabbitbrush
<i>Cirsium arvense</i> (L.) Scop.	Canada thistle
<i>Cirsium centaureae</i> (Rydb.) K. Schum	Fringed thistle
<i>Crepis acuminata</i> Nutt.	Tapertip hawksbeard
<i>Crepis modocensis</i> Greene	Yellowstone hawksbeard
<i>Crepis occidentalis</i> Nutt.	Western hawksbeard
<i>Erigeron eatoni</i> A. Gray	
ssp. <i>typicus</i> Cronq.	Eaton fleabane
<i>Erigeron engelmanni</i> A. Nels.	
ssp. <i>typicus</i> Cronq.	Engelmann fleabane
<i>Erigeron nematophyllus</i> Rydb.	Mat fleabane
<i>Erigeron pulcherrimus</i>	
var. <i>wyomingia</i> (Rydb.) Cronq.	Wyoming Basin fleabane
<i>Erigeron pumilus</i> Nutt.	
ssp. <i>concinoides</i> Cronq.	Low fleabane

Compositae (Cont'd)

<i>Franseria acanthicarpa</i> (Hook.) Coville	Annual bursage
<i>Grindellia squarrosa</i> (Push) Dunal	Curlycup gumweed
<i>Gutierrezia sarothrae</i> (Pursh) Britt. & Rusby	Broom snakeweed
<i>Haplopappus acaulis</i> (Nutt.) A. Gray	Stemless goldenweed
<i>Haplopappus armerioides</i> (Nutt.) A. Gray	Thrifty goldenweed
<i>Haplopappus lanceolatus</i> (Hook.) T. & G.	Lanceleaf goldenweed
<i>Helianthus annuus</i> L.	Common sunflower
<i>Hymenopappus filifolius</i> Hook.	
var. <i>luteus</i> (Nutt.) Turner	Fineleaf hymenopappus
<i>Hymenoxys richardsonii</i> (Hook.) Ckll.	Pingue actinea
<i>Iva axillaris</i> Pursh	Poverty sumpweed
<i>Iva xanthifolia</i> Nutt.	Marshelder sumpweed
<i>Lygodesmia grandiflora</i> (Nutt.) T. & G.	Largeflowered skeletonplant
<i>Machaeranthera canescens</i> (Pursh) A. Gray	Hoary tansyaster
<i>Machaeranthera glabriuscula</i> (Nutt.) Cronq.	
& Keck var. <i>villosa</i> (Nutt.) Cronq. & Keck	Alkali aster
<i>Machaeranthera grindelioides</i> (Nutt.) Shinnery	
<i>Malacothrix sonchoides</i> (Nutt.) T. & G.	Nuttall goldenweed
<i>Senecio integerrimus</i> Nutt.	Desert dandelion
var. <i>exaltatus</i> (Nutt.) Cronq.	
<i>Stephanomeria runcinata</i> Nutt.	Lambstongue groundsel
<i>Tanacetum nuttallii</i> T. & G.	Desert wirelettuce
<i>Tetradymia canescens</i> D.C.	Nuttall tansy
<i>Tetradymia nuttallii</i> T. & G.	Gray horsebrush
<i>Townsendia incana</i> Nutt.	Nuttall horsebrush
<i>Townsendia strigosa</i> Nutt.	Hoary townsendia
<i>Tragopogon pratensis</i> L.	Hairy townsendia
<i>Wyethia scabra</i> Hook.	Meadow-salsify
<i>Xanthium strumarium</i> L.	Roughleaf wyethia
	Common cocklebur

Codes for Designation of Plant Species

The following codes, based on the scientific names, are used for the designation of species in field recording and in the presentation of data for plots and transects. All plants collected and identified are included in the code list and conflicts in code letters have been resolved. For convenience, the plants have been alphabetized within three life-form groups; trees and shrubs, grasses and grass-like plants, and forbs. Species with several varieties or subspecies, such as *Chrysothamnus nauseosus*, are given a single code designation in most instances. Field identification of varietal forms often is difficult and contributes little to ecological information. Two genera, *Crepis* and *Arabis*, have proved difficult to separate into species in the field and are designated collectively as *Crepis* spp. and *Arabis* spp. in data presentation, although species codes are provided.

Code	Scientific Name	Common Name	Longevity
Amal	<i>Amelanchier alnifolia</i>	Saskatoon serviceberry	Perennial
Arfr	<i>Artemisia frigida</i> 1/	Fringed sagewort	"
Arlu	<i>Artemisia ludoviciana</i> 1/	Louisiana sagewort	"
Arno	<i>Artemisia nova</i>	Black sagebrush	"
Arpe	<i>Artemisia pedatifida</i> 1/	Birdfoot sagewort	"
Arsp	<i>Artemisia spinescens</i> 1/	Bud sagewort	"
Artr	<i>Artemisia tridentata</i>	Basin big sagebrush	"
Atca	<i>Atriplex canescens</i>	Fourwing saltbush	"
Atco	<i>Atriplex confertifolia</i>	Shadscale saltbush	"
Atga	<i>Atriplex gardneri</i> 1/	Nuttall saltbush	"
Cemo	<i>Cercocarpus montanus</i>	True mountainmahogany	"
Chna	<i>Chrysothamnus nauseosus</i>	Rubber rabbitbrush	"
Chpa	<i>Chrysothamnus parryi</i>	Parry rabbitbrush	"
Chvi	<i>Chrysothamnus vicidiflorus</i>	Douglas rabbitbrush	"
Eula	<i>Eurotia lanata</i> 1/	Common winterfat	"
Grsp	<i>Grayia spinosa</i>	Spiny hopsage	"
Gusa	<i>Gutierrezia sarothrae</i> 1/	Broom snakeweed	"
Juos	<i>Juniperus osteosperma</i>	Utah juniper	"
Koam	<i>Kochia americana</i> 1/	Greenmolly summercypress	"
Magl	<i>Machaeranthera glabriuscula</i> 1/	Alkali aster	"
Potr	<i>Populus tremuloides</i>	Quaking aspen	"
Prvi	<i>Prunus virginiana</i>	Black chokecherry	"
Putr	<i>Purshia tridentata</i>	Antelope bitterbrush	"
Rhtr	<i>Rhus trilobata</i>	Skunkbush sumac	"
Save	<i>Sarcobatus vermiculatus</i>	Black greasewood	"
Syor	<i>Symphoricarpos oreophilus</i>	Mountain snowberry	"
Tape	<i>Tamarix pentandra</i>	Saltcedar tamarisk	"
Teca	<i>Tetradymia canescens</i>	Gray horsebrush	"
Tenu	<i>Tetradymia nuttallii</i>	Nuttall horsebrush	"
1/	= Suffrutescent or half-shrubs		



Plant Codes (Cont'd)

Code	Scientific Name	Common Name	Longevity
<u>Grasses and Grass-like Plants</u>			
Agcr	Agropyron cristatum	Crested wheatgrass	Perennial
Agsp	Agropyron spicatum	Bluebunch wheatgrass	"
Agsm	Agropyron smithii	Western wheatgrass	"
Agda	Agropyron dasystachyum	Thickspike wheatgrass	"
Arfe	Aristida fendleriana	Fendler threeawn	"
Brco	Bromus commutatus	Hairy brome	Annual
Brin	Bromus inermis	Smooth brome	Perennial
Brte	Bromus tectorum	Cheatgrass brome	Annual
Cael	Carex eleocharis	Needleleaf sedge	Perennial
Cafi	Carex filifolia	Threadleaf sedge	"
Camo	Calamagrostis montanensis	Plains reedgrass	"
Dagl	Dactylis glomerata	Common orchardgrass	"
Disp	Distichlis spicata	Inland saltgrass	"
Elci	Elymus cinerus	Basin wildrye	"
Feoc	Festuca octoflora	Common sixweeks fescue	Annual
Hoji	Hordeum jubatum	Foxtail barley	"
Hoca	Hordeum jubatum var. caespitosum	Bobtail barley	"
Hija	Hilaria jamesii	Galleta hilaria	Perennial
Kocr	Koeleria cristata	Prairie junegrass	"
Orhy	Oryzopsis hymenoides	Indian ricegrass	"
Phco	Phragmites communis	Common reed	"
Poca	Poa canbyi	Canby bluegrass	"
Pofe	Poa fendleriana	Mutton bluegrass	"
Popr	Poa pratensis	Kentucky bluegrass	"
Pose	Poa secunda	Sandberg bluegrass	"
Pudi	Puccinellia distans	Weeping alkaligrass	"
Sihy	Sitanion hystrix	Bottlebrush squirreltail	"
Spgr	Spartina gracilis	Alkali cordgrass	"
Sper	Sporobolus cryptandrus	Sand dropseed	"
Stco	Stipa comata	Needleandthread	"
Stvi	Stipa viridula	Green needlegrass	"
Scne	Scirpus nevadensis	Nevada bulrush	"
Scpa	Scirpus paludosus	Alkali bulrush	"
Trma	Triglochin maritima	Marsh arrowgrass	"
Juba	Juncus balticus	Baltic rush	"
<u>Forbs</u>			
Acmi	Achillea millefolium	Common yarrow	Annual
Aggl	Agoseris glauca	Pale agoseris	Perennial
Alac	Allium acuminatum	Tapertip onion	"
Alte	Allium textile	Prairie onion	"
Alde	Alyssum desertorum	Desert alyssum	Annual
Amgr	Amaranthus gracilians	Prostrate pigweed	"
Amre	Amaranthus retroflexus	Redroot pigweed	"
Anbr	Androstephium breviflorum	Purple funnellily	Perennial
Andi	Antennaria dimorpha	Low pussytoes	"

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. The text suggests that organizations should implement robust systems to track every aspect of their operations, from procurement to sales.

2. The second part of the document addresses the challenges faced by organizations in managing their resources effectively. It highlights the need for strategic planning and the allocation of resources based on long-term goals. The author argues that without a clear vision and a well-defined strategy, organizations risk inefficiency and failure. It provides several examples of how different organizations have successfully managed their resources to achieve their objectives.

3. The third part of the document focuses on the role of leadership in driving organizational success. It discusses the qualities and skills that effective leaders possess, such as vision, communication, and decision-making. The text also explores the importance of fostering a positive organizational culture and encouraging employee engagement. It suggests that leaders should act as role models and inspire their teams to achieve their full potential.

4. The fourth part of the document discusses the impact of technology on modern organizations. It highlights how technological advancements have transformed various industries and created new opportunities for growth. However, it also points out the challenges associated with technology, such as data security and the digital divide. The author suggests that organizations should embrace technology and invest in digital infrastructure to stay competitive in the market.

5. The fifth part of the document discusses the importance of sustainability in business operations. It explains how sustainable practices can lead to long-term success and profitability. The text covers various aspects of sustainability, including environmental, social, and governance (ESG) factors. It suggests that organizations should integrate sustainability into their core business strategy and report on their progress to stakeholders.

6. The sixth part of the document discusses the role of innovation in driving organizational growth. It emphasizes that innovation is not just about developing new products or services but also about finding new ways to improve existing processes. The text suggests that organizations should foster a culture of innovation and encourage employees to think creatively. It also discusses the importance of protecting intellectual property and investing in research and development.

7. The seventh part of the document discusses the importance of risk management in business. It explains how identifying and mitigating risks can help organizations avoid potential losses and ensure their long-term survival. The text covers various types of risks, such as financial, operational, and reputational risks. It suggests that organizations should implement a comprehensive risk management framework and regularly assess their risk profile.

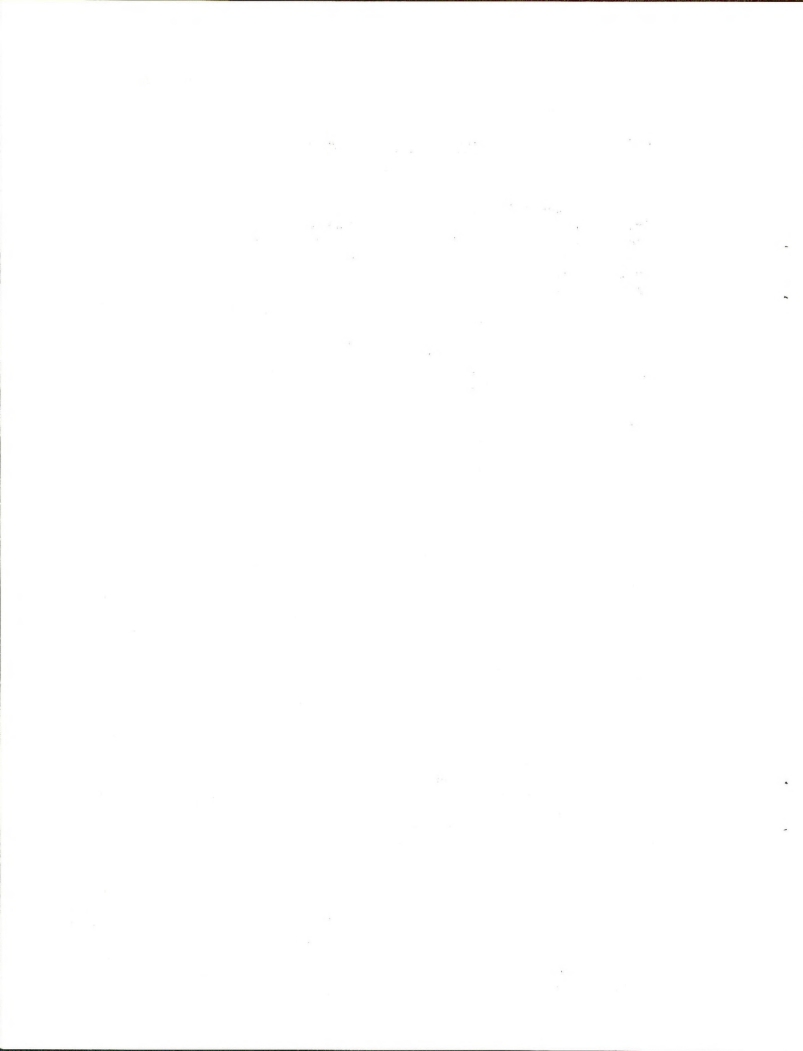
8. The eighth part of the document discusses the importance of customer satisfaction in business. It explains that happy customers are more likely to remain loyal and recommend the organization to others. The text suggests that organizations should focus on understanding their customers' needs and preferences and providing excellent service. It also discusses the importance of gathering customer feedback and using it to improve the organization's offerings.

9. The ninth part of the document discusses the importance of financial management in business. It explains that sound financial management is crucial for the success of any organization. The text covers various aspects of financial management, including budgeting, forecasting, and financial reporting. It suggests that organizations should maintain accurate financial records and seek professional advice when needed.

10. The tenth part of the document discusses the importance of human resources management in business. It explains that a well-managed workforce is essential for organizational success. The text covers various aspects of HR management, including recruitment, training, and performance management. It suggests that organizations should invest in their employees and create a supportive work environment to attract and retain top talent.

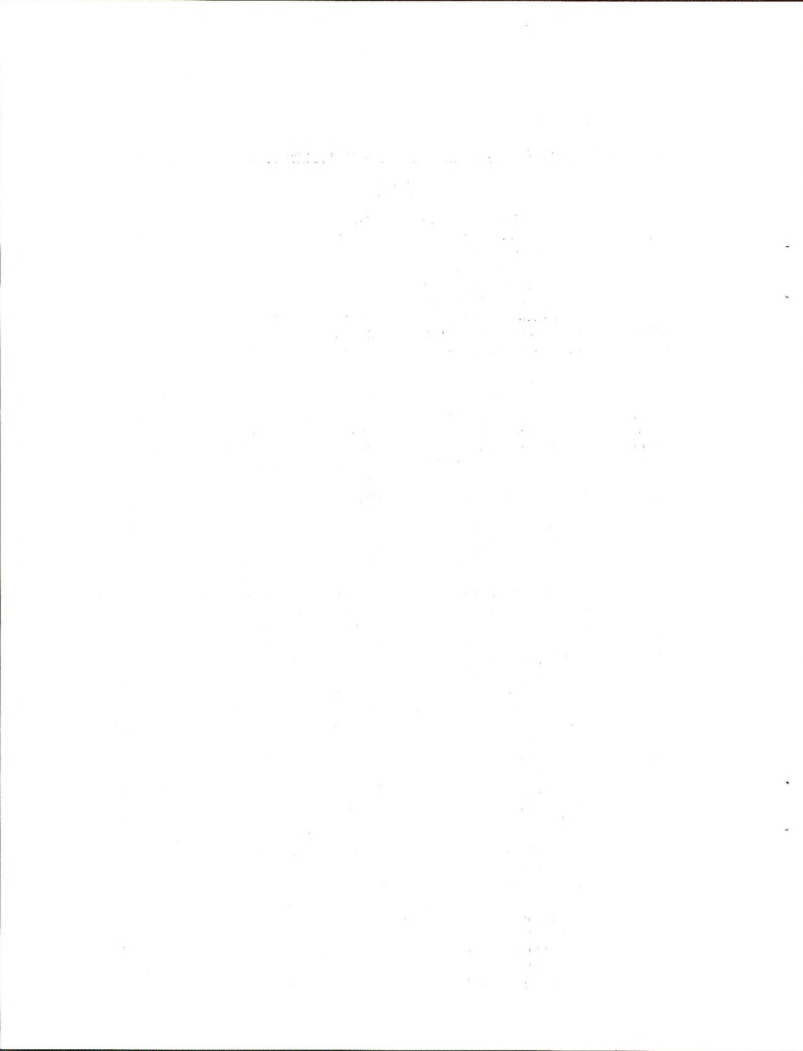
Plant Codes (Cont'd)

Code	Scientific Name	Common Name	Longevity
<u>Forbs</u>			
Anro	Antennaria rosea	Rose pussytoes	Perennial
Arco	Arabis cobrensis	Cobren rockcress	"
Arcr	Arabis crandellii	Crandell rockcress	"
Arho	Arabis holboellii	Holboell rockcress	"
Arli	Arabis lignifera	Woody rockcress	"
Arpu	Arabis pulchra	Beauty rockcress	"
Arfe	Arenaria fendleri	Fendler sandwort	"
Arho	Arenaria hookeri	Hooker sandwort	"
Arnu	Arenaria nuttallii	Nuttall sandwort	"
Ascr	Asclepias cryptoceras	Pallid milkweed	"
Assp	Asclepias speciosa	Showy milkweed	"
Asad	Aster adsensens	Longleaf aster	"
Asar	Aster arenosus	Smallflower aster	"
Aspa	Aster pauciflorus	Fewhead aster	"
Asci	Astragalus cibarius	Silky milkvetch	"
Asdi	Astragalus diversifolius	Meadow milkvetch	"
Asdr	Astragalus drummondii	Drummond milkvetch	"
Asge	Astragalus geyeri	Geyer milkvetch	Annual
Asha	Astragalus haydenianus	Hayden milkvetch	Perennial
Asje	Astragalus jejunus	Starveling milkvetch	Perennial
Aspe	Astragalus pectinatus	Fineleaved milkvetch	"
Aspb	Astragalus pubentissimus	Greenriver milkvetch	"
Aspu	Astragalus purshii	Pursh milkvetch	"
Assp	Astragalus spatulatus	Spoonleaf milkvetch	"
Aste	Astragalus tenellus	Pulse milkvetch	"
Atar	Atriplex argentea	Tumbling saltbush	Annual
Atdi	Atriplex dioeca	Scurfless saltbush	"
Atpa	Atriplex patula	Fathen saltbush	"
Atwo	Atriplex wolffii	Wolf saltbush	"
Basa	Balsamorhiza sagittata	Arrowleaf balsamroot	Perennial
Bahy	Bassia hyssopifolia	Fivehock smotherweed	Annual
Canu	Calochortus nuttallii	Sego mariposalily	Perennial
Cami	Camelina microcarpa	Littleseed falseflax	Annual
Capu	Cardaria pubescens	Hairy whitetop	Perennial
Cach	Castilleja chromosa	Desert indianpaintbrush	"
Cacr	Caulanthus crassicaulis	Thickstem wildcabbage	"
Chdo	Chaenactis douglasii	Douglas dustymaiden	"
Chat	Chenopodium atrovirens	Dark goosefoot	Annual
Chbe	Chenopodium berlandieri	Pitseed goosefoot	"
Chde	Chenopodium dessicatum	Desert goosefoot	"
Chfr	Chenopodium fremontii	Fremont goosefoot	"
Chte	Chorispora tenella	Common bluemustard	"
Ciar	Cirsium arvense	Canada thistle	Perennial
Cice	Cirsium centaureae	Fringed thistle	Perennial
Cllu	Cleome lutea	Yellow beeplant	Annual
Clse	Cleome serrulata	Rockymountain beeplant	Annual
Copa	Collinsia parviflora	Smallflowered blueeyedmary	Annual
Copal	Comandra pallida	Pale bastardtoadflax	Perennial



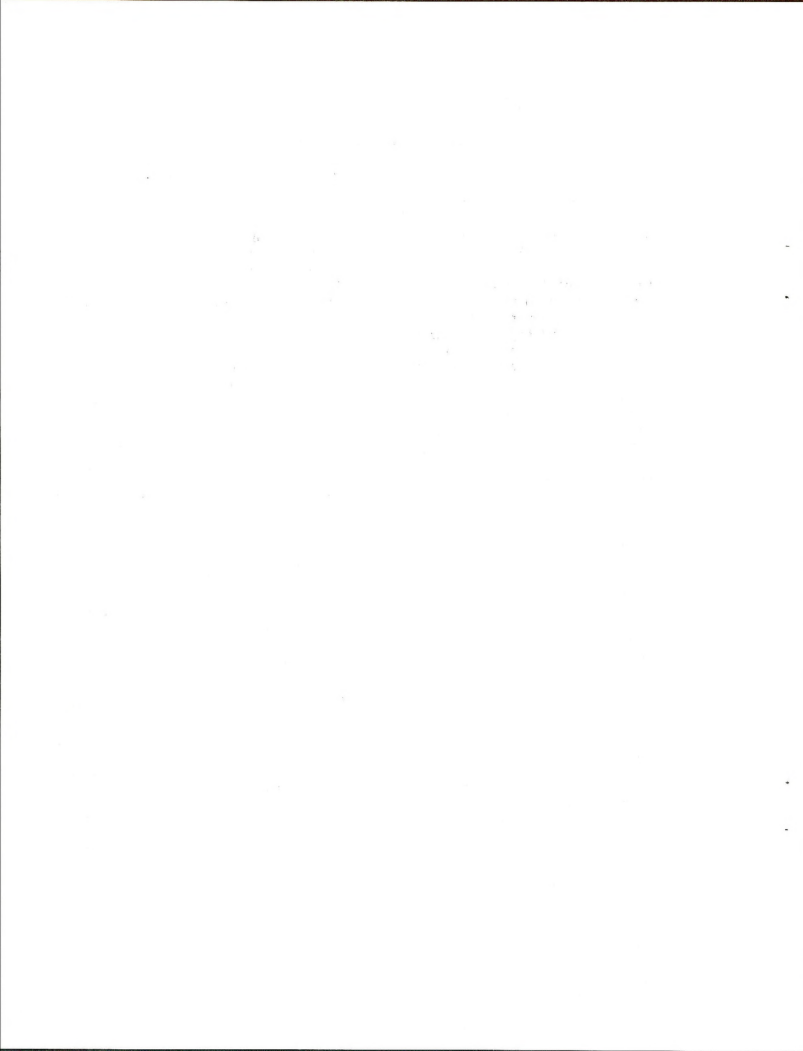
Plant Codes (Cont'd)

Code	Scientific Name	Common Name	Longevity
<u>Forbs</u>			
Cora	Cordylanthus raemosus	Bushy birdbeak	Annual
Crac	Crepis acuminata	Tapertip hawksbeard	Perennial
Crmo	Crepis modocensis	Yellowstone hawksbeard	"
Croc	Crepis occidentalis	Western hawksbeard	"
Crbr	Cryptantha bradburiana	Minerscandle cryptantha	"
Crca	Cryptantha caespitosa	Tufted cryptantha	"
Crfl	Cryptantha flava	Yellow cryptantha	"
Crfc	Cryptantha flavoculata	Roughseed cryptantha	"
Crke	Cryptantha kelseyana	Kelsey cryptantha	Annual
Crwa	Cryptantha watsonii	Watson cryptantha	Annual
Cyac	Cymopterus acaulis	Stemless springparsley	Perennial
Cybu	Cymopterus bulbosus	Onion springparsley	Perennial
Dene	Delphinium nelsoni	Nelson larkspur	Perennial
Depi	Descurania pinnata	Pinnate tansymustard	Annual
Deso	Descurania sophia	Flixweed tansymustard	Annual
Eppa	Epilobium paniculatum	Sticky willowherb	Annual
Erea	Erigeron eatoni	Eaton fleabane	Perennial
Eren	Erigeron engelmanni	Engelmann fleabane	"
Erne	Erigeron nematophyllus	Mat fleabane	"
Erpul	Erigeron pulcherrimus	Basin fleabane	"
Erpu	Erigeron pumilus	Low fleabane	"
Erbr	Eriogonum brevicaulis	Shortstem wildbuckwheat	"
Erce	Eriogonum cernuum	Nodding wildbuckwheat	Annual
Ermi	Eriogonum microthecum	Slenderbush wildbuckwheat	Perennial
Erov	Eriogonum ovalifolium	Cushion wildbuckwheat	"
Erum	Eriogonum umbellatum	Sulphur wildbuckwheat	"
Eras	Erysimum asperum	Plains wallflower	"
Euro	Euphorbia robusta	Robust spurge	"
Frac	Franseria acanthicarpa	Annual bursage	Annual
Gaco	Galium coloradoense	Colorado bedstraw	Perennial
Gara	Gayophytum ramosissimum	Branchy groundsmoke	Annual
Glag	Gilia aggregata	Skyrocket gilia	Perennial
Cico	Gilia congesta	Ballhead gilia	Perennial
Gile	Gilia leptomeria	Smallflower gilia	Annual
Gipu	Gilia pumila	Dwarf gilia	Annual
Gisi	Gilia sinuata	Rosy gilia	Annual
Gisp	Gilia spicata	Spike gilia	Perennial
Gite	Gilia tenerima	Tawny gilia	Annual
Glie	Glycyrrhiza lepidota	American licorice	Perennial
Grsq	Grindellia squarrosa	Curlycup gumweed	Perennial
Gypa	Gymnostris parvula	Leafless falsephlox	Annual
Hagl	Halogeton glomeratus	Common halogeton	Annual
Haac	Haplopappus acaulis	Stemless goldenweed	Perennial
Haar	Haplopappus armerioides	Thrifty goldenweed	"
Hala	Haplopappus lanceolatus	Lanceleaf goldenweed	"
Hebo	Hedysarum boreale	Northern sweetvetch	"
Hean	Helianthus annuus	Common sunflower	Annual
Hyfi	Hymenopappus filifolius	Fineleaf hymenopappus	Perennial



Plant Codes (Cont'd)

Code	Scientific Name	Common Name	Longevity
<u>Forbs</u>			
Hyri	Hymenoxys richardsonii	Pingue actinea	Perennial
Ivax	Iva axillaris	Poverty sumpweed	Perennial
Ivxa	Iva xanthifolia	Marshelder sumpweed	Annual
Lare	Lappula redowskii	Bluebur stickseed	Annual
Lemo	Lepidium montanum	Mountain pepperweed	Perennial
Lepe	Lepidium perfoliatum	Clasping pepperweed	Annual
Lepu	Leptodactylon pungens	Granite gilia	Perennial
Leal	Lesquerella alpina	Tufted bladderpod	Perennial
Lelu	Lesquerella ludoviciana	Foothill bladderpod	Perennial
Lere	Lewisia rediviva	Bitterroot lewisia	Perennial
Lise	Linanthus septentrionalis	Sevenstar flaxflower	Annual
Lile	Linum lewisii	Lewis flax	Perennial
Liin	Lithospermum incisum	Narrowleaf gromwell	Perennial
Liru	Lithospermum ruderale	Wayside gromwell	Perennial
Lofo	Lomatium foeniculaceum	Hairyseed lomatium	Perennial
Losi	Lomatium simplex	Narrowleaf lomatium	Perennial
Luar	Lupinus argenteus	Silvery lupine	Perennial
Lupu	Lupinus pusillus	Rusty lupine	Annual
Lygr	Lygodesmia grandiflora	Largeflowered skeletonplant	Perennial
Maca	Machaeranthera canescens	Hoary tansyaster	Perennial
Magr	Machaeranthera grindelioides	Nuttall goldenweed	Perennial
Maso	Malacothrix sonchoides	Desert dandelion	Annual
Meal	Mentzelia albicaulis	Whitestem mentzelia	Annual
Mede	Mentzelia decapetala	Tenpetal mentzelia	Perennial
Medi	Mentzelia dispersa	Bushy mentzelia	Perennial
Meob	Mertensia oblongifolia	Oblongleaf bluebells	Perennial
Migr	Microsteris gracilis	Microsteris	Annual
Monu	Monolepis nuttalliana	Nuttall monolepis	"
Mopu	Monolepis pusilla	Low monolepis	"
Nade	Nama densum	Leafy nama	"
Oean	Oenothera andina	Andean sundrops	"
Oeca	Oenothera caespitosa	Tufted eveningprimrose	Perennial
Oeco	Oenothera contorta	Plains eveningprimrose	Annual
Oepa	Oenothera pallida	Pale eveningprimrose	Perennial
Oesc	Oenothera scapoidea	Barestem eveningprimrose	Annual
Oppo	Opuntia polyacantha	Plains pricklypear	Perennial
Orfa	Orebanche fasciculata	Purple broomrape	"
Oxmu	Oxytropis multiceps	Flowery loco	"
Oxse	Oxytropis sericea	Silky loco	"
Pefr	Penstemon fremontii	Fremont penstemon	"
Peme	Penstemon mensarum	Grandmesa penstemon	"
Pepa	Penstemon pachyphyllus	Thickleaf penstemon	"
Pera	Penstemon radicosus	Matroot penstemon	"
Pest	Penstemon strictus	Rockymountain penstemon	"
Phgl	Phacelia glandulosa	Desert phacelia	Annual
Phho	Phlox hoodii	Hoods phlox	"
Phlo	Phlox longifolia	Longleaf phlox	"
Phau	Physaria australis	Common twinpod	"
Pipa	Plantago patagonica	Wooly plantain	"
Poav	Polygonum aviculare	Prostrate knotweed	"



Plant Codes (Cont'd)

Code	Scientific Name	Common Name	Longevity
<u>Forbs</u>			
Posa	<i>Polygonum sawatchense</i>	Sawatch knotweed	Annual
Psia	<i>Psoralea lanceolata</i>	Lemon sucrifpea	Perennial
Ptte	<i>Pteryxia terebinthina</i>	Ferny springparsley	"
Racy	<i>Ranunculus cymbalaria</i>	Shore buttercup	"
Ruhy	<i>Rumex hymenosepalus</i>	Canaigre dock	"
Rutr	<i>Rumex triangulivalvis</i>	Trianglevalved dock	"
Saeu	<i>Salicornia europaea</i>	Marshfire glasswort	Annual
Saka	<i>Salola kali</i>	Common russianthistle	Annual
Sein	<i>Senecio integerrimus</i>	Lambstongue groundsel	Perennial
Siel	<i>Sisymbrium elegans</i>	Showy hedgemustard	Annual
Sili	<i>Sisymbrium linifolium</i>	Narrowleaf hedgemustard	Perennial
Spco	<i>Sphaeralcea coccinea</i>	Scarlet globemallow	"
Stpi	<i>Stanleya pinnata</i>	Desert princesplume	"
Stru	<i>Stephanomeria runcinata</i>	Desert wirelettuce	"
Stlo	<i>Streptanthella longirostris</i>	Beakpod nippletwist	Annual
Stcor	<i>Streptanthus cordatus</i>	Heartleaf twistflower	Perennial
Sude	<i>Suaeda depressa</i>	Pursh seepweed	Annual
Sufr	<i>Suaeda fruticosa</i>	Alkali seepweed	Perennial
Suni	<i>Suaeda nigra</i>	Black seepweed	Annual
Suoc	<i>Suaeda occidentalis</i>	Western seepweed	Annual
Tanu	<i>Tanacetum nuttallii</i>	Nuttall tansy	Perennial
Thar	<i>Thlaspi arvense</i>	Field pennycress	Annual
Thin	<i>Thelypodium integrifolium</i>	Entireleaved thelypod	Perennial
Thrh	<i>Thermopsis rhombifolia</i>	Prairie thermopsis	"
Toin	<i>Townsendia incana</i>	Hoary townsendia	"
Tost	<i>Townsendia strigosa</i>	Hairy townsendia	"
Trpr	<i>Tragopogon pratensis</i>	Meadow salsify	Annual
Trgy	<i>Trifolium gymnocarpon</i>	Hollyleaf clover	Perennial
Trmi	<i>Tripterocalyx micranthus</i>	Annual sandpuffs	Annual
Viam	<i>Vicia americana</i>	American vetch	Perennial
Vinu	<i>Viola nuttallii</i>	Nuttall violet	"
Wysc	<i>Wyethia scabra</i>	Roughleaf wyethia	"
Xast	<i>Xanthium strumarium</i>	Common cocklebur	Annual

Poison Buttes - Exclosure I

The soil at this location is a member of a fine loamy, mixed family of Borollic Haplargids. (Colors are for dry colors unless otherwise stated)

- A1 0-5" Brown (10 YR 5/3) loam, dark brown (10 YR 3/3) moist; weak fine granular structure; friable when moist and dry; abundant roots; non-calcareous, mildly alkaline (pH 7.5); gradual smooth boundary.
- B21t 5-15" Pale brown (10 YR 6/3) loam, brown to dark brown (10 YR 4/3) moist; moderate fine and very fine subangular blocky structure; firm when dry, friable when moist; common to abundant roots, non-calcareous, mildly alkaline (pH 7.5); gradual smooth boundary.
- B22t 15-22" Very pale brown (10 YR 7/4) sandy clay loam, yellowish brown (10 YR 5/4) moist; weak, medium to fine subangular blocky structure; firm when dry, friable when moist; few roots; non-calcareous, mildly alkaline (pH 7.7); clear smooth boundary.
- Cca 22-40" White (1.5Y 8/2) sandy loam, light gray (2.5Y 7/2) moist; massive; firm when dry, friable when moist; very few roots; calcareous, strongly alkaline (pH. 8.5).

Location: R92W T13N SE 1/4 Sec 25

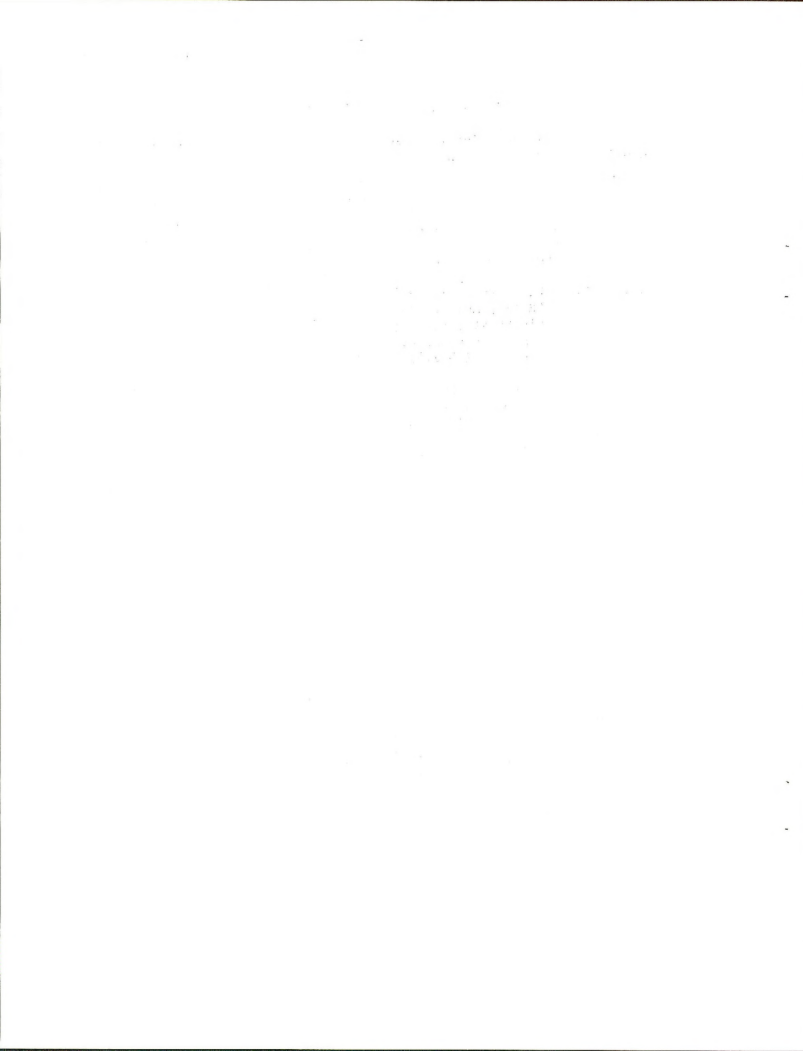
Setting: Northeast facing side hill on Browns Park shale at depths greater than 40". Soil material has weathered from Browns Park shales and sandstone. 6% slope, 6800' elevation.

Drainage and Permeability: Well drained, moderately permeable

Special Features: Few cobble and gravel throughout profile.

Vegetation: Big sagebrush, western wheatgrass. Range Site Classification (estimated) - loamy, excellent.

Total Soluble Salts: A, 05; B21t, 0.7; B22t, 0.3; Cca, 0.3



Poison Buttes - Exclosure II

The soil at this location is a member of a fine loamy, mixed, calcareous. Fringed family of Ustic Torriorthents. (Colors are for dry colors unless otherwise stated).

- Al 0-6" Light gray (2.5Y 7/2) loam grayish brown (2.5Y 5/2) moist; weak fine granular structure; friable when moist and dry; common roots; calcareous, strongly alkaline (pH 8.5); gradual smooth boundary.
- C11 6-14" Light gray (2.5Y 7/2) loam, grayish brown (2.5Y 5/2) moist; weak fine subangular blocky structure; firm when dry, friable when moist; common roots; calcareous, strongly alkaline (pH 8.5); gradual smooth boundary.
- C12 14-22" White (2.5Y 8/2) loam, light brownish gray (2.5Y 6/2) moist; massive; firm when dry, friable when moist; few roots; calcareous, strongly alkaline (pH 8.5); clear, smooth boundary to sandstone bedrock.
- IIC 22" + Sandstone bedrock

Location: R92W T13N SE 1/4 Sec. 36

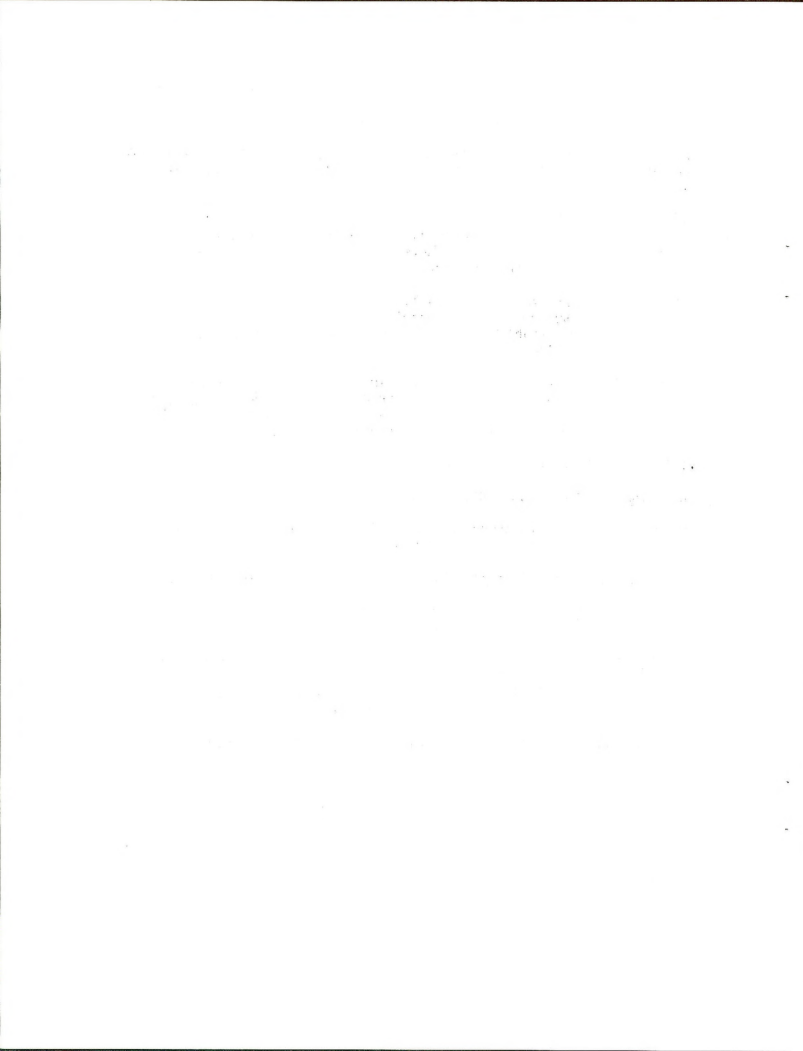
Setting: Browns Park sandstone and shale weathering in place on 12% west facing slope. Elevation 6600'

Drainage and Permeability: Well drained, moderate permeability.

Special Features: Depth to sandstone or shale will vary from 20 to 40 inches.

Vegetation: Utah juniper, mountain mahogany with small amounts of western wheatgrass, bluebunch wheatgrass, indian ricegrass and bottlebrush squirreltail. Range site classification (estimated) - shallow breaks, high good.

Total Soluble Salts: Al, 0.5; C11, 0.3; C12, 0.3; IIC, 0.3



Openhiemer Pasture Exclosure

The soil at this location is a member of a fine loamy, mixed family of Borollic Natrargids. (Colors are for dry colors unless otherwise stated).

- A1 0-3" Brown (10 YR 5/3) very fine sandy loam, dark brown (10 YR 3/3) moist; weak fine granular; friable when moist and dry; abundant roots; non calcareous, mildly alkaline (pH 7.5) clear smooth boundary.
- B2t 3-10" Very pale brown (10 YR 7/3) clay loam, brown (10 YR 5/3) moist; strong fine and medium columnar structure that parts to strong medium angular blocky structure; very firm when dry, firm when moist; common roots; non-calcareous, mildly alkaline (pH 7.6); clear smooth boundary.
- B3ca 10-16" Very pale brown (10 YR 7/3) loam, brown (10 YR 5/3) moist; moderate medium angular blocky structure; very firm when dry, firm when moist; few roots; calcareous, strongly alkaline (pH 8.9); gradual smooth boundary.
- Cca 16-40" Light gray (2.5Y 7/2) loam, light brownish gray (2.5 Y 6/2) moist; moderate medium angular blocky structure in upper part; very firm when dry, firm when moist; very few roots; calcareous, very strongly alkaline (pH 9.1).

Location: R92W T13N SW1/4 Sec. 5.

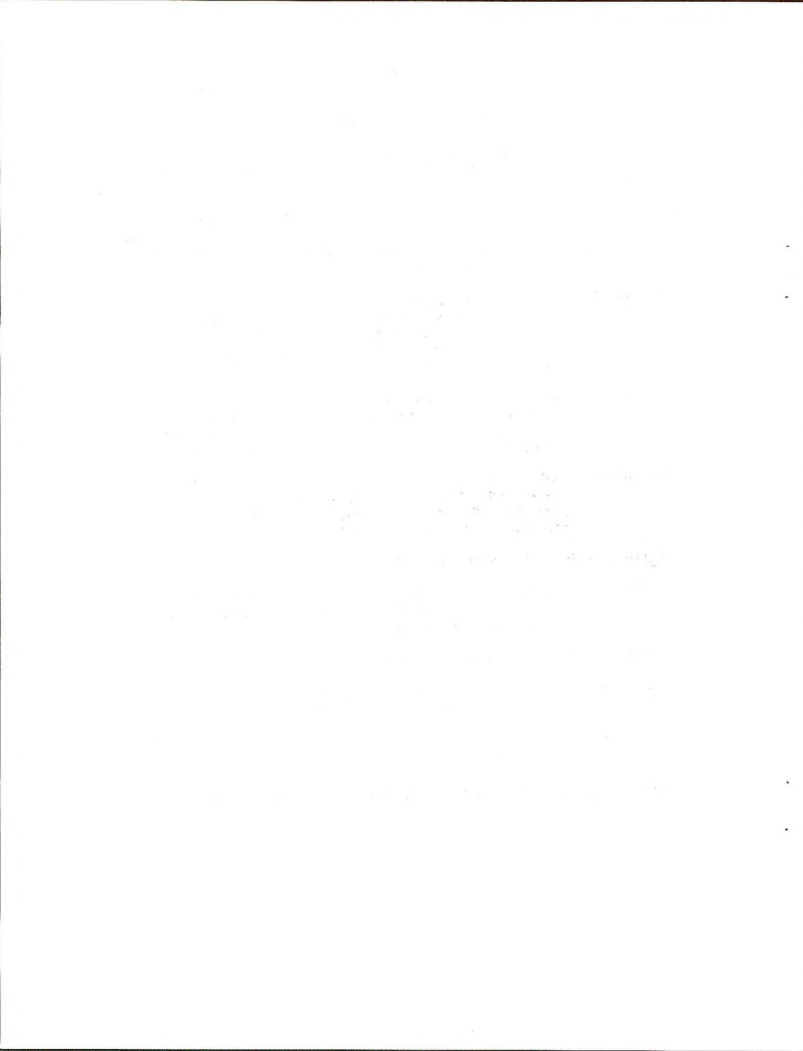
Setting: Side hill on Browns Park shale at depths greater than 40"
Soil material weathered from Browns Park shale and sandstone.
5° northeast facing slope. 6300' elevation.

Drainage and Permeability: Well drained, moderately slow permeability.

Special Features: No gravel or cobble in profile. This soil could be classed as a Borollic Haplargid.

Vegetation: Big sagebrush, western wheatgrass and needleleaf sedge.
Range site classification (estimated) - clayey, good.

Total Soluble Salts: A1, 0.3; B2t, 0.3; B3ca, 0.6; Cca, 0.8



Pasture A Enclosure

The soil at this location is a member of a fine loamy, mixed family of Borollic Camborthids. (Colors are for dry colors unless otherwise stated).

- A1 0-4" Brown (10 YR 5/3) loam, dark brown (10 YR 3/3) moist; weak, fine granular structure; friable when dry and moist; abundant roots; non-calcareous, mildly alkaline (pH 7.8); gradual smooth boundary.
- B2 4-10" Pale brown (10 YR 6/3) loam, brown to dark brown (10 YR 4/3) moist; moderate fine and very fine subangular blocky structure; friable when dry and moist; common roots; non-calcareous, moderately alkaline (pH 7.9); clear smooth boundary.
- B3 10-15" Pale brown (10 YR 6/3) loam, brown to dark brown (10 YR 4/3) moist; weak fine subangular blocky structure; friable when moist and dry; few to common roots; calcareous, moderately alkaline (pH 8.4) clear boundary.
- Clca 15-22" Very pale brown (10 YR 7/3) clay loam, brown (10 YR 5/3) moist; weak medium subangular blocky structure; firm when dry, friable when moist; few roots; calcareous, strongly alkaline (pH 8.9); gradual smooth boundary.
- C2ca 22-40" Very pale brown (10 YR 7/3) loam, pale brown (10 YR 6/3) moist; massive; firm when dry, friable when moist; very few roots; calcareous, very strongly alkaline (pH 9.1).

Location: R95W T13N SW 1/4 Sec. 25

Setting: Side hill on Browns Park shale at depths greater than 40". Soil material has weathered from Browns Park shale and sandstone. 9% slope to the east. 6900' elevation.

Drainage and Permeability: Well drained, moderately permeable.

Special features: Few cobble and gravel throughout profile.

Vegetation: Big sagebrush, bluebunch wheatgrass, western wheatgrass and mutton bluegrass. Range site classification (estimated) -loamy, excellent.

Total Soluble Salts: A1, 0.4; B2, 06; B3, 03; Clca, 0.4; C2ca, 2.8

Pasture B - Enclosure I

Nuttall Saltbush Area

The soil at this location is a member of a fine loamy, mixed, calcareous, frigid family of Typic Torriorthents. (Colors are for dry colors unless otherwise stated).

- A1 0-4" Light brownish gray (2.5Y 6/2) silt loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; friable when dry and moist; common roots; calcareous, strongly alkaline (pH 8.5) very strongly alkaline (pH 9.1) under saltbush; clear smooth boundary.
- C1 4-15" Light yellowish-brown (2.5Y 6/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; friable when moist and dry; few to common roots; calcareous, strongly alkaline (pH 8.5); gradual smooth boundary.
- C2 15-25" Light yellowish-brown (2.5Y 6/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak fine subangular blocky structure; friable when moist, firm when dry; few roots; calcareous, moderately alkaline (pH 8.4); clear smooth boundary.
- C3 25-40" Pale yellow (2.5Y 7/4) loam, light olive brown (2.5Y 5/4) moist, massive; friable when moist, firm when dry; very few roots; calcareous, moderately alkaline (pH 8.4).

Location: R95W T13N SW 1/4 Sec. 36.

Setting: Fan material from Browns Park shale on 2% slope, south aspect, 6500' elevation. Shale bedrock at depths greater than 40 inches.

Drainage and Permeability: Well drained, moderately permeable.

Special Features: There will be some surface sealing due to sodium from salt bush plants. Some erosion between saltbush plants.

Vegetation: Nuttall saltbush with western wheatgrass, Indian ricegrass and Bottlebrush squirreltail or principal associated grasses. Range site classification (estimated) - saline upland, low excellent.

Total Soluble Salts: A1, 1.1; C1, 0.9; C2, 0.7; C3, 0.7

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Pasture B - Enclosure I

Big Sagebrush Area

The soil at this location is a member of a fine loamy, mixed family of Borollic Camborthids. (Colors are for dry colors unless otherwise stated)

- A1 0-4" Brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; friable when dry and moist; abundant roots; calcareous, moderately alkaline (pH 8.3); clear smooth boundary.
- B2 4-14" Pale brown (10YR 6/3) loam, brown to dark brown (10YR 4/3) moist; weak very fine subangular blocky structure; friable when dry and moist; common roots; calcareous, moderately alkaline (pH 8.3); gradual smooth boundary.
- B3 14-26" Pale yellow (2.5Y 7/4) clay loam, light olive brown (2.5Y 5/4) moist; weak medium subangular blocky structure; firm when dry, friable when moist; few roots; calcareous, moderately alkaline (pH 8.4); gradual smooth boundary.
- Cca 26-40" Pale yellow (2.5Y 7/4) loam, light olive brown (2.5Y 5/4) moist; firm when dry, friable when moist; very few roots; calcareous, strongly alkaline (pH 8.7).

Location: R95W T13N SW 1/4 Sec. 36

Setting: Fan material from Browns Park shale on 2% south facing slope. 6500' elevation. Shale bedrock at depths greater than 40 inches.

Drainage and Permeability: Well drained, moderately permeability.

Special Features: No gravel or cobble present in profile.

Vegetation: Tall, dense stand of big sagebrush with bottlebrush squirreltail and small amounts of western wheatgrass as understory. Range site classification (estimated) - loamy, low fair.

Total Soluble Salts: A1, 1.3; B2, 0.4; B3, 0.3; Cca, 0.3

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Pasture B - Exclosure II

The soil at this location is a member of a loamy skeletal family of Borollic Calciorthids. (Colors are for dry colors unless otherwise stated).

A1 0-6" Light brownish gray (10 YR 6/2) gravelly sandy loam, dark grayish brown (10 YR 4/2) moist; weak fine subangular blocky structure; friable when dry and moist; calcareous moderately alkaline (pH 8.4); gradual smooth boundary.

Clca 6-14" Very pale brown (10 YR 7/3) loam, brown (10 YR 5/3) moist; weak fine subangular blocky structure; friable when moist and dry; calcareous, strongly alkaline (pH 8.5); clear smooth boundary.

C2ca 14-36" Very pale brown (10 YR 8/4) gravelly loam, very pale brown (10 YR 7/4) moist; massive; friable when moist, firm when dry; calcareous, strongly alkaline (pH 8.6).

Location: R95W T12N NW 1/4 Sec. 10

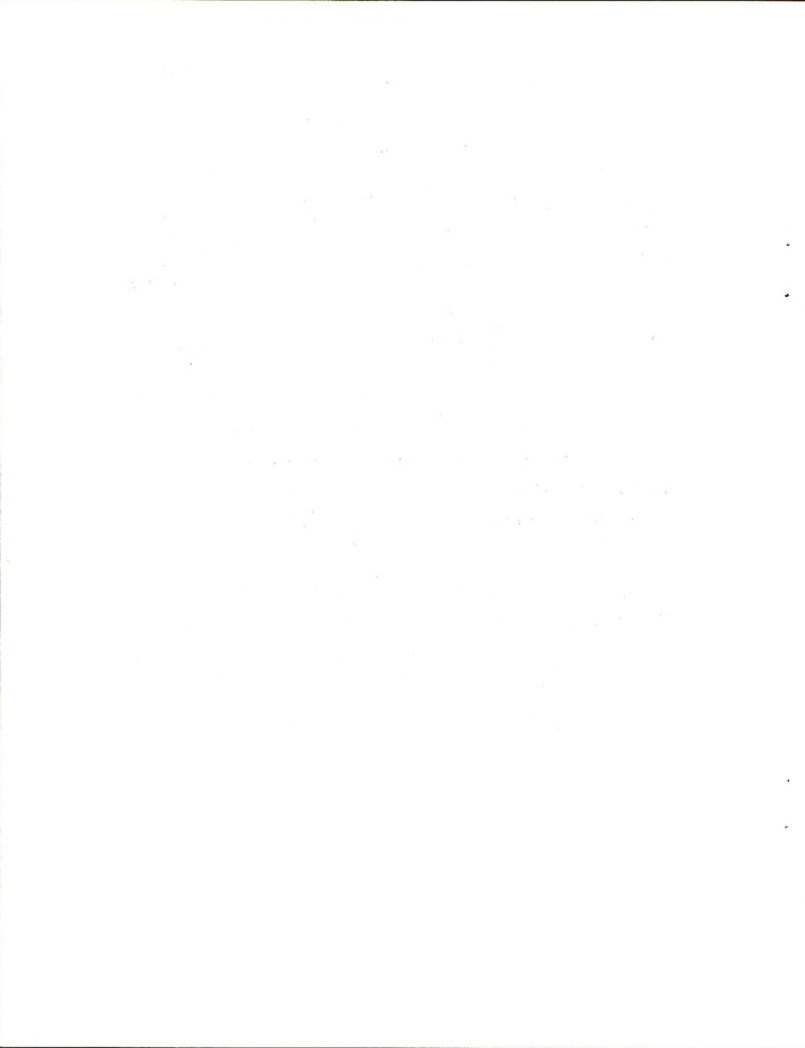
Setting: Fan terrace over Browns Park shale and sandstone with some old terrace lag gravel and cobble. 8% slope to the south, 6800' elevation.

Drainage and Permeability: Well drained, moderate permeability.

Special Features: Roots - 0-6" - common, 6-14" - common, 14-36" - few. 14-36" cobble and gravel make up 45% of the volume. Depth to bedrock is greater than 40".

Vegetation: Utah juniper with very little understory. Bluebunch wheat-grass major grass species. Range site classification (estimated) shallow breaks, low good.

Total Soluble Salts: A1, 0.5; Clca; 0.3; C2ca, 0.3



Pasture B - Birdfoot sagewort (Artemisia pedatifida) Site

The soil at this location is a member of a fine montmorillonitic family of Borcollic Natrargids. (Colors are for dry colors unless otherwise stated).

- A1 0-6" Pale brown (10 YR 6/3) loam, brown to dark brown (10 YR 4/3) moist; weak to moderate very fine subangular blocky structure; friable when moist and dry; common roots; calcareous strongly alkaline (pH 8.5); clear smooth boundary.
- B21t 6-12" Light gray (10 YR 7/2) clay, light brownish gray (10 YR 6/2) moist; strong fine columnar structure that parts to fine and medium strong angular blocky structure; very firm when dry, firm when moist; few roots on vertical faces; calcareous strongly alkaline (pH 8.9); clear smooth boundary.
- B22t 12-23" Light gray (10 YR 7/2) clay, light brownish gray (10 YR 6/2) moist; strong medium columnar structure that parts to medium and coarse strong angular blocky structure; very firm when dry, firm when moist; few roots on vertical faces; calcareous, strongly alkaline (pH 8.8); clear smooth boundary.
- Cca 23-40" Light gray (10 YR 7/2) clay, light brownish gray, (10 YR 6/2) moist; massive with a few vertical cracks; very firm when dry, firm when moist; no roots; calcareous strongly alkaline (pH 8.8).

Location: R94W T12N NE 1/4 Sec. 7

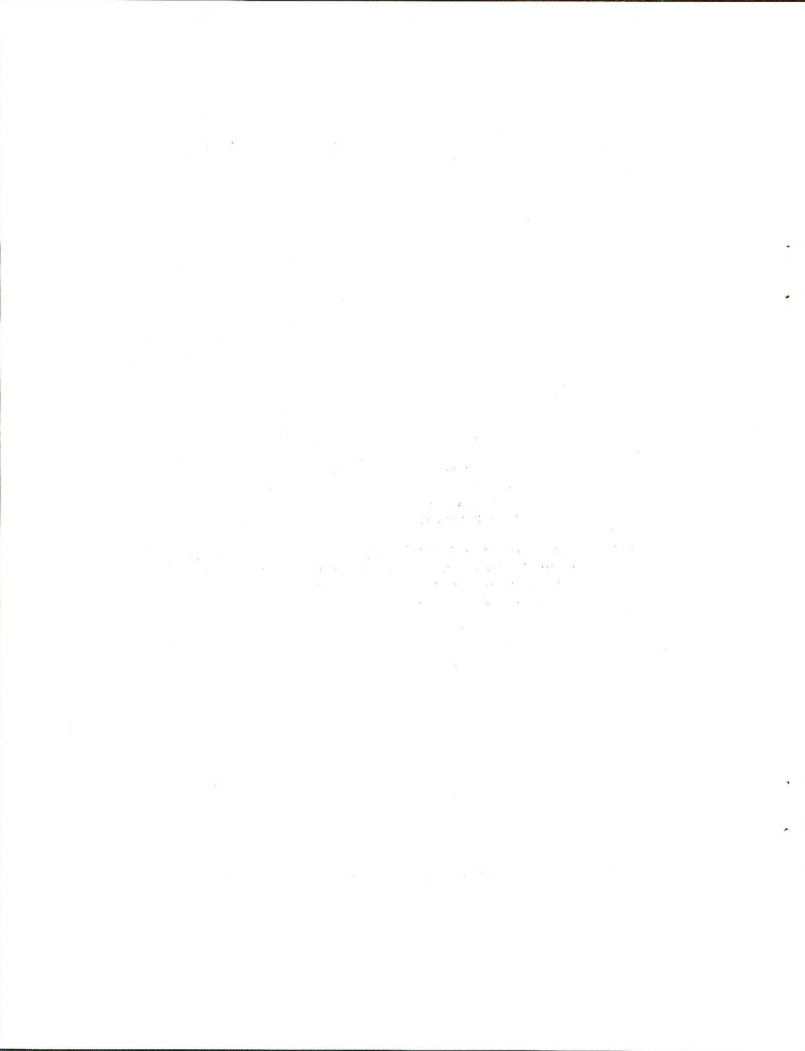
Setting: Deep fan material from Browns Park or Wasatch shale on a 3% west facing slope. 6500' elevation.

Drainage and Permeability: Moderately well drained, very slowly permeable.

Special Features: No cobble or gravel. Shale at depths greater than 40".

Vegetation: Birdfoot sagewort with bottlebrush squirreltail, Indian ricegrass Hoods phlox as principal associated species. Range site classification (estimated) - impervious clay, low good.

Total Soluble Salts: A1, 0.5; B21t, 1.1; B22t, 2.4; Cca, 5.1



Pasture C Enclosure

The soil at this location is a member of a coarse loamy, mixed family of Borollic Camborthids. (Colors are for dry colors unless otherwise stated).

- A1 0-5" Pale brown (10 YR 7/3) fine sandy loam, brown to dark brown (10 YR 4/3) moist, weak fine granular structure; friable when moist or dry; abundant roots; non-calcareous, mildly alkaline (pH 7.6); clear smooth boundary.
- B2 5-15" Very pale brown (10 YR 7/3) fine sandy loam, brown (10 YR 5/3) moist moderate very fine subangular blocky structure; firm when dry, friable when moist; common roots; non-calcareous, mildly alkaline (pH 7.7); clear smooth boundary.
- Cca 15-32" Very pale brown (10 YR 7/4) fine sandy loam, yellowish brown (10 YR 5/4) moist; massive; firm when dry, friable when moist; few roots; calcareous, strongly alkaline (pH 9.0); clear smooth boundary.
- IIC 32-40" Pale yellow (2.5Y 6/4) fine sandy loam, light yellowish brown (2.5Y 6/4) moist; massive; firm when dry, friable when moist; no roots; calcareous, strongly alkaline (pH 9.0). This horizon is formed in soft weathered sandstone.

Location: R93W T13N SW 1/4 Sec. 28

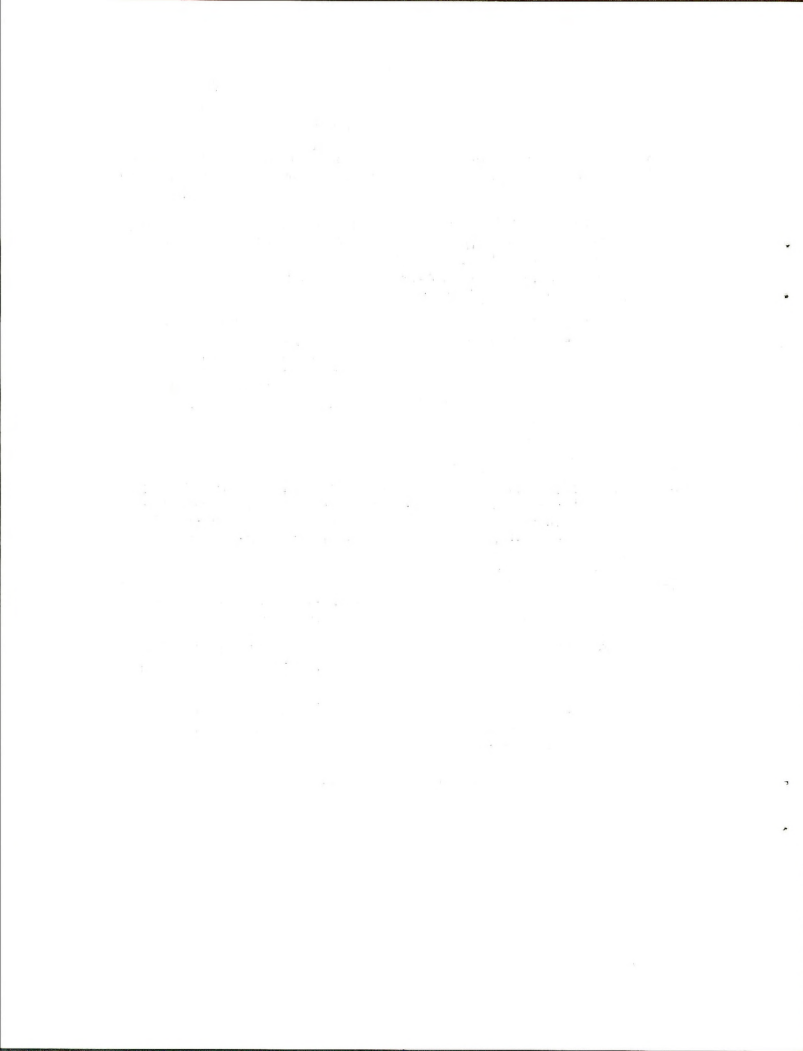
Setting: This soil is developing in Browns Park sandstone. Depth to sandstone ranges from 20 to 40 inches. 2% southwest facing slope. 6300' elevation.

Drainage and Permeability: Well drained, moderately rapid permeability.

Special features: No gravel or cobble present.

Vegetation: Big sagebrush with western wheatgrass and needleandthread being principal associated grasses. Range site classification (estimated) - sandy, low fair.

Total Soluble Salts: A1, 0.4; B2, 0.3; Cca, 1.2; II c, 4.5



Pasture D Exclosure

The soil at this location is a member of a coarse loamy, mixed, calcareous, frigid family of Typic Torrifluvents. (Colors are for dry colors unless otherwise stated).

- A1 0-10" Pale brown (10 YR 4/3) stratified sandy loam, brown to dark brown (10 YR 4/3) moist; weak fine subangular blocky structure; friable when moist and dry; common to abundant roots; calcareous, moderately alkaline (pH 8.3); gradual smooth boundary.
- C1 10-23" Light brownish gray (2.5Y 6/2) stratified sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine subangular blocky structure; few to common roots; calcareous, strongly alkaline (pH 8.7) gradual smooth boundary.
- C2 23-40" Very pale brown (10 YR 7/3) stratified sandy loam, brown (10 YR 5/3) moist; massive, firm when dry, friable when moist; few roots; calcareous, strongly alkaline (pH 9.0).

Location: R94W T13N SW 1/4 Sec. 26

Setting: Recent fan material from Browns Park and Wasatch sandstones on 5% north facing slope. 6300' elevation. Bedrock at depths greater than 40 inches.

Drainage and Permeability: Well drained, moderately rapid permeability.

Special Features: Area contains a few minor "slick" (sodium affected) areas. Slight buildup of carbonates in C2 horizon.

Vegetation: Shadscale and big sagebrush. Principal grasses are needle-andthread, and Indian ricegrass. Range site classification (estimated) - sandy, excellent.

Total Soluble Salts: A1, 0.5; C1, 0.7; C2, 1.4

Pasture D alkali aster (Machaeranthera glabrinscula) Site

The soil at this location is a member of a clayey montmorillonitic, calcareous, frigid, shallow family of Typic Torriorthents. (Colors are for dry colors unless otherwise stated).

- A1 0-3" Very pale brown (10 YR 7/3) clay, brown (10 YR 5/3) moist; moderate fine granular structure; firm when dry, friable when moist; few roots; calcareous, strongly alkaline (pH 8.6); clear smooth boundary.
- C1 3-19" Very pale brown (10 YR 7/3) clay, brown (10 YR 5/3) moist; massive with some vertical cracks; very firm when dry, firm when moist; few roots; calcareous, strongly alkaline (pH 9.0); gradual smooth boundary.
- IIC2 19-24" Dark grayish brown (2.5Y 4/2) silty clay loam shale, very dark grayish brown (2.5Y 3/2) moist; massive layer bed-rock structure; very firm dry and moist; few roots; calcareous, strongly alkaline (pH 8.5).

Location: R94W T12N NW 1/4 Sec. 10

Setting: South facing 3% slope. Soil material weathered from clay shale from Browns Park or Wasatch scale. Shale bedrock at 10 to 20 inches.

Drainage and Permeability: moderately well drained, very slowly permeable.

Special Features: No gravel or cobble

Vegetation: Alkali aster with Indian ricegrass and bottlebrush squirrel-tail or principal associated species. Range site classification (estimated) - shallow clay, fair.

Total Soluble Salts: A1, 07; C1, 1.5; II C2, 6.0

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